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HISTORY AND PROCEEDINGS

OF THE

PLAGUE COMMISSION, BENGAL.

1896 TO 1898.

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CALCUTTA:

BENGAL SECRETARIAT PRESS.

1899.

Price Rs. 2.

BOMBAY BRANCH
OF THE
ROYAL ASIATIC SOCIETY.
TOWN HALL, BOMBAY.

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Government of Maharashtra

on 01 February, 2020

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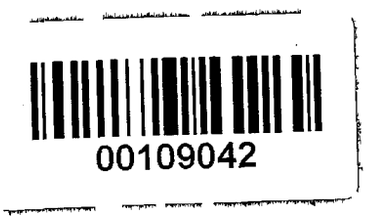

Calcutta:
BENGAL SECRETARIAT PRESS,
1899.

Published at the BENGAL SECRETARIAT BOOK DEPÔT,
Writers' Buildings, Calcutta.

OFFICIAL AGENTS.

In India—

THACKER, SPINK & Co., Calcutta.
W. NEWMAN & Co., Calcutta.
THACKER & Co., Bombay.
HIGGINBOTHAM & Co., Madras.
SUPERINTENDENT, AMERICAN BAPTIST MISSION PRESS, Rangoon.

In London—

E. A. ARNOLD, 37 Bedford Street, Strand, W.C.
CONSTABLE & Co., 2 Whitehall Gardens, S.W.
SAMPSON LOW, MARSTON & Co., St. Dunstan's House, Fetter Lane, E.C.
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C. G. ROGERS,

Conservator of Forests, Berar Circle, C. P.

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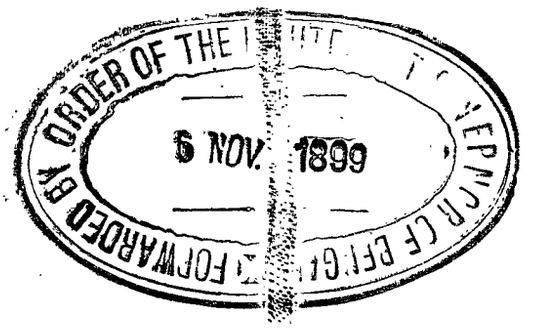

HISTORY AND PROCEEDINGS OF THE BENGAL PLAGUE COMMISSION.

CONSTITUTION AND CHANGES IN THE *PERSONNEL* OF THE MEDICAL BOARD (NOW THE PLAGUE COMMISSION).

In Government Resolution No. 937T.—M., dated the 10th October 1896[1], the following gentlemen were appointed to form a Committee, called the Medical Board, for the purpose of determining the action to be taken by all executive authorities, whether official or municipal, with the object of preventing the spread to Bengal of bubonic plague, which was raging in Bombay at the time:—

Hon'ble H. H. Risley, c.i.e., Secretary to Government, Financial and Municipal Department	*President.*
Hon'ble P. Playfair, c.i.e.	*Members.*
„ J. G. H. Glass, c.i.e., Chief Engineer ...	
Surgeon-Colonel G. C. Ross, Inspector-General of Civil Hospitals, Bengal	
Surgeon-Captain H. J. Dyson, Sanitary Commissioner ...	
Dr. Mohendra Lal Sarkar, c.i.e.	
Surgeon-Captain Robson-Scott, Officiating Deputy Sanitary Commissioner, Metropolitan and Eastern Bengal Circle	*Secretary.*

2. Under the subsequent orders of Government (No. 1011T.—M., dated 14th October 1896), Brigade-Surgeon-Lieutenant-Colonel D. D. Cunningham was appointed to be a member of the Board, but his duties as such were restricted to advising on bacteriological questions.

3. Upon the death of Surgeon-Captain Robson-Scott on the 25th November 1896, Surgeon-Captain J. C. Vaughan acted as Secretary to the Board; but Mr. W. Banks Gwyther, Under-Secretary to the Government of Bengal in the Public Works Department, was appointed Secretary on the 11th December 1896, and held the post up to 31st March 1898, with the exception of an interval of a month during October and November 1897, when he went on leave and O. C. Lees, Esq., Under-Secretary in the Public Works Department, officiated for him.

4. There have been other changes also in the *personnel* of the Board. Upon Surgeon-Colonel Ross's retirement from the public service, his place was taken by the Officiating Inspector-General of Civil Hospitals, Surgeon-Colonel B. Franklin, c.i.e., from 3rd February 1897 to 27th March 1897, and subsequently by Surgeon-Colonel J. H. Newman.

5. Under subsequent orders the following gentlemen were added to the Board as members:—

Surgeon-Lieutenant-Colonel G. Bomford, Principal, Medical College, on 3rd February 1897; Rai Kailash Chandra Bose, Bahadur, l.m.s., on 12th February 1897; the Hon'ble M. C. Turner and Mr. Allan Arthur, on 13th July 1897.

(1) *Vide* Appendix I.

6. The Hon'ble H. H. Risley, C.I.E., having gone on leave for two months and-a-half (from 7th July 1897 to 21st September 1897), the Hon'ble J. G. H. Glass. C.I.E., Chief Secretary, Public Works Department, took his place as President of the Board for that period.

MEETINGS OF THE MEDICAL BOARD.

7. The Board held 20 regular sittings up to 10th November 1897 when its designation was changed to " Plague Commission." The members attended a special meeting of the General Committee of the Corporation of Calcutta, held at the Municipal Office on the 23rd October 1896, with a view to settling by personal discussion the draft regulations to be framed by the Corporation under section 334 of the Calcutta Municipal Consolidation Act, 1888. The members of the Board also attended a meeting of the Bengal Chamber of Commerce held on the 15th February 1897 for the purpose of discussing questions connected with the pilgrimage to Mecca, using Diamond Harbour as the port of embarkation. The proceedings of the meetings of the Medical Board are appended to this report[1]. Besides discussions at meetings, many less important questions were decided by circulating papers among the members of the Board.

8. The principal matters which were considered by the Board are briefly summarised in the following paragraphs.

SUSPECTED CASES OF PLAGUE IN 1896.

9. Reports of some suspected cases of bubonic plague in Calcutta and its vicinity caused alarm, and numerous enquiries were made of the Board as to the existence or otherwise of real plague in Bengal by municipal and mercantile bodies, Consuls of Foreign Governments, and by other Local Governments and Administrations, and also by private individuals. The Board made the most minute enquiries possible into the cases which came to their notice. As the result of their careful examination, greatly helped by the valuable services of Brigade Surgeon-Lieutenant-Colonel D. D. Cunningham, C.I.E., F.R.S., in the matter of bacteriological examination, they arrived at the conclusion that none of the reported cases was real bubonic plague. With a view to allaying public anxiety in this matter, the Board drew up a note[2] on the subject, carefully dealing with every point of importance in detail, and circulated it in the quarters from which the enquiries proceeded. Copies of the note were also communicated to the local press in order to give full publicity to the results of the Board's enquiry.

10. Numerous reports reached the Board of suspected cases of plague in some of the mufassal districts; but further enquiries by superior officers of the Medical Department established beyond doubt that none of those was a real case of plague. It may be added that after the publication in the local papers of a description of the symptoms of bubonic plague, the people during the first excitement attributed any swelling of the glands to the effect of plague in cases which would not have attracted any attention in the ordinary times. The Board reported their regret in having to record that an indiscreet action on the part of Dr. W. J. Simpson, then Health Officer to the Corporation of Calcutta, gave another occasion for public excitement on the question of plague. In spite of the declared views of the Medical Board in respect of the suspected cases of plague brought to their notice as stated above, Dr. Simpson drew up a note which explicitly suggested the existence of plague in Calcutta in October 1896, and that the drastic measures introduced by him resulted in the stamping out of the commencing epidemic. This note of Dr. Simpson appeared in public print[3]; the attention of the Board was drawn to it, and, fully alive to the serious interests at stake, the Board lost no time in considering the scientific value of Dr. Simpson's note. It is not necessary to enter into details here: it is enough to say that the Board satisfied itself that

(1) *Vide* Appendix II.
(2) *Vide* Appendix III-A.
(3) *Vide* Appendix III-B.

Dr. Simpson's view was untenable, and they also took steps to prevent the recurrence of any such highly undesirable publication by bringing the matter to the notice of Government.

SANITATION OF CALCUTTA.

11. The Board commenced their enquiries into the sanitary condition of the town of Calcutta with a view to determining what steps should be taken to guard against an outbreak of plague, which was then believed to be imminent. At their second meeting held on the 22nd October 1896, the Board issued instructions to the five sanitary officers, whose services had been placed at their disposal, to make a complete survey of the town proper of Calcutta in order to ascertain and report on the actual sanitary condition and requirements of the area. Similar instructions were also issued to Surgeon-Captain Pilgrim, then Civil Surgeon of the 24-Parganas, in respect of the area added to Calcutta by Bengal Council Act II of 1888. The reports[1] submitted by these officers disclosed the existence of very serious defects and of a state of affairs which, in the opinion of the Board, constituted a standing menace to the health of the city, as being peculiarly favourable to the propagation of the plague if through any agency the germs of the disease should be imported from Bombay. The Board considered that two kinds of measures were necessary to improve the unsatisfactory state of the town—(1) large structural changes which would take time and possibly legislation, and (2) minor reforms such as would admit of immediate execution. Reserving the larger schemes, such as the opening out of new streets and lanes and the introduction of a Building Act, for future consideration, the Board paid more immediate attention to the introduction of the minor reforms. In order that they might be able to carry their plans into execution, the Board found it necessary that they should thoroughly acquaint themselves with the working of the Conservancy Department of the Corporation, and to this end they examined Dr. C. Banks, temporary Chief Superintendent of Conservancy to the Corporation of Calcutta, who had had ample opportunities of acquiring a thorough knowledge of the matter. Dr. Banks was examined at the Board's meetings held on 3rd and 7th December 1896. His evidence[2] lent a strong support to the reports submitted by the sanitary officers mentioned above, and he made many valuable suggestions for the removal of the existing defects.

12. The Board summarised[3] the sanitary defects of Calcutta under the following heads, and recommended the Corporation to adopt such measures as were capable of being immediately carried out:—

(1) Overcrowded and badly-built houses.
(2) Defects of public latrines.
(3) Do. of private ditto
(4) State of house-drains and drain-pipes.
(5) Do. of surface drains.
(6) Neglect of road-scavenging.
(7) State of compounds and court-yards.
(8) Pollution of wells.
(9) State of cowsheds and stables.
(10) Do. of hackney-carriage stands.
(11) Condition of bustees.
(12) Disposal of house-refuse.

13. At this time the Board were specially directed by Government[4] not only to ascertain the defects in the sanitary condition of the town, but also to determine the causes which led to them, and consequently it was found necessary to refer to the Corporation[5] for information on the following points:—

(1) Whether the facts were correctly stated in the reports of the Sanitary Officers and the Civil Surgeon of the 24-Parganas?

---

(1) *Vide* Appendix IV-A.
(2) *Vide* Appendix IV-B.
(3) Board's letter No. 43, dated 30th November 1896—*vide* Appendix IV-C.
(4) Letter No. 4526 Medical, dated 1st December 1896, from the Government of Bengal, Municipal Department—*vide* Appendix IV-D.
(5) Medical Board's letter No. 125, dated 9th December 1896—*vide* Appendix IV-E.

(2) Whether these facts had been reported to the Commissioners by the Health Officer, and with what results?
(3) Whether the law as it stands was sufficient to enable the Commissioners to deal with the facts reported?
(4) Whether the law was enforced, and if not, why not?
(5) What duties had been assigned to the Health Officer under section 41 of Bengal Act II of 1888, and had these duties been duly carried out?

14. Despite the urgent nature of the reference, it is to be regretted that the Corporation did not for months communicate to the Board what preparation, if any, had been made on the lines suggested by them, although they had expressed their readiness [1] to give due weight and attention to the Board's recommendations. Consequently the matter was at this stage referred to Government, with a request that the Commissioners might be called upon to state at once what they had actually done to prevent an outbreak of plague in the town, and that, if the measures up to this time adopted by them were found to be inadequate, they might be ordered, under section 38 of Act II (B.C.) of 1888, to appoint a special staff large enough to deal at once and effectively with the masses of filth and refuse of various kinds which had been allowed to accumulate in various parts of the town; or that, if that procedure were thought likely to cause further delays, the emergency should be met by special legislation. [2]

15. The Board subsequently received through Government the reply from the Corporation[3] to their letters referred to above. In that communication the Commissioners admitted the correctness of most of the statements made by the Sanitary Officers in their reports, and expressed their willingness to carry out, as far as possible, the recommendations of the Board. The Commissioners also admitted that the law as it stood was insufficient to deal with the various matters brought forward. The Board gave their careful consideration to this letter of the Corporation, and addressed the Chairman further on the subject,[4] dealing with each of the heads enumerated in his letter and making enquiries whether special powers should be given under the Epidemic Diseases Act, 1897, in order to make sections 318, 319, and 320 of the Calcutta Municipal Act effective, and thus push on with the improvements suggested. The Board also requested the Chairman of the Corporation[5] to favour them with an expression of his personal views, as Head of the Municipal Executive, on the various points raised in their above letter, and also as to whether a Magistrate should not be appointed for the trial of municipal cases. From what the Chairman said in his letters Nos. 7732 [6] and 727, [7] dated 25th March and 8th May 1897, respectively, it appeared that the Commissioners had not fully appreciated the gravity of the situation, and that on the whole they were satisfied with what was being already done under each head. A suggestion was, however, made that the Presidency Magistrate might be directed to arrange for the more speedy disposal of municipal cases. The Board now considered it unnecessary to further prolong correspondence with the Corporation, as the points embraced by some of the questions raised had formed the subject of consideration of the Building Commission, which was then appointed by Government, and which had already entered upon its duties at this time; and also because Government had undertaken legislation, with a view to arm the Municipality with all the necessary powers, in the draft Bill relating to the Calcutta Municipality. However, the Chairman of the Corporation, in a letter to the Secretary to the Government of Bengal, stated that a special grant of Rs. 30,000 had been made for the purpose of cleansing the town, and that consequently a large additional establishment of coolies and sweepers, with the necessary carts, etc., was being organised.

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(1) Corporation's letter No. 5778, dated 22nd December 1896—*vide* Appendix IV-F.
(2) Medical Board's letter No. 155, dated 31st December 1876 and No. 204, dated 20th January 1897,—*vide* Appendix IV-G. and IV-H.
(3) Corporation's letter No. 6492, dated 1st February 1897—*vide* Appendix IV-I.
(4) Medical Board's letter No. 345, dated the 23rd February 1897—*vide* Appendix IV-J.
(5) Medical Board's letter No. 429, dated 10th March 1897—*vide* Appendix IV-K.
(6) *Vide* Appendix IV-L.
(7) *Vide* Appendix IV-M.]

SANITATION OF HOWRAH.

16. The Chairman of the Municipality of Howrah attended the first meeting of the Medical Board held on the 20th October 1896, at which the sanitary condition of the town of Howrah was discussed, and the Board expressed themselves satisfied with the measures which were being carried out for cleansing the town under the orders of the Chairman and the Health Officer. The Board also asked Surgeon-Major Walsh, Civil Surgeon of Howrah, to report on the sanitary requirements of the town. The report prepared by this gentleman was forwarded to the Magistrate of Howrah, with a request that he would call upon Surgeon Lieutenant-Colonel Murray, who had meantime succeeded Dr. Walsh and was well acquainted with the place, to report fully on the sanitary condition of the town, and to state definitely its sanitary needs, forwarding the report for the consideration of the Board, together with an expression of his own opinion as to whether any changes in the law were required in order that the necessary improvements might be carried out. The Magistrate submitted Surgeon Lieutenant-Colonel Murray's report (1), with the recommendation that all the powers conferred on the Corporation of Calcutta under the Epidemic Diseases Act should also be conferred on the Municipal Commissioners of Howrah. The correspondence was at this stage laid before Government for disposal.

SANITATION OF MUNICIPALITIES ADJACENT TO CALCUTTA AND HOWRAH.

17. The Board directed their special attention to the sanitation of the following 18 municipalities which are adjacent to Calcutta and Howrah:—

Hooghly and Chinsura ...	In Hooghly district.
Serampore ...	
Uttarpara ...	
Baidyabati ...	
Bhadreswar ...	
Kotrang ...	
Bansberia ...	
Balty	In Howrah district.
Cossipore-Chitpur ...	In the 24-Parganas.
Maniktola ...	
Baranagar ...	
South Suburban ...	
South Dum-Dum ...	
North Dum-Dum ...	
South Barrackpore ...	
North Barrackpore ...	
Barasat	
Naihati	

Drs. J. C. Vaughan, B. H. Deare, E. S. Peck, C. D. Dawes, and P. R. Hay Jagannadham visited these municipalities, and submitted their inspection reports to the Board, which were duly considered by the members.

Separaiton of mill areas from the municipalities of which they form part, and of forming such areas into separate municipalities.

18. The Board also considered the proposal made by the Indian Jute Manufacturers Association of separating mill areas from the municipalities of which they form part, and of forming such areas into separate municipalities. The Board were generally in favour of the proposal, and submitted their views to Government.

Steps taken by the municipalities in Bengal for preventing the spread of plague into their jurisdiction.

19. In continuation of the orders of Government as regards the cleansing of municipalities adjacent to Calcutta and Howrah, a circular was issued by Government to all Commissioners of Divisions, calling attention to the necessity for cleansing all towns in the Province,

(1) Appendix V.

and asking for the submission to the Board of reports showing the steps which had been or ought to be taken to improve the sanitary condition of these places, so as to render them safe against the spread of the plague. Various reports on the subject were received and duly considered by the Board. It is satisfactory to note that most of these municipalities co-operated heartily with the Board in their endeavours to carry out the necessary measures.

IMPORTATION OF HIDES FROM INDIA.

20. The Italian and French Governments prohibited the importation of hides from any port of India, although Bombay and Karachi were the only ports affected with plague at the time. This caused great inconvenience and much loss to those who were interested in hide traffic, and Messrs. Thomson, Lehzen and other shippers of hides submitted a representation through the Bengal Chamber of Commerce, in which they pointed out that apart from the fact that the Calcutta port is not affected by the plague, and that no hides come to Calcutta from infected districts, the hides are shipped in a perfectly dry condition. They enquired whether the Medical Board were, under the circumstances, prepared to make any recommendation to Government in the matter. In their meeting held on the 30th January 1897 the Board considered the matter; their opinion was that hides which have been treated by the arsenical process would not form a medium for conveying infection, but they were not prepared to say the same of dry-salted hides. The Board communicated this opinion to the Local Government, suggesting that the Government of India might be moved to take such steps as should appear desirable to induce the Italian and French Governments to withdraw their prohibition in the case of hides which had been cured with arsenic.

EXPORTS OF RAGS AND SECOND-HAND CLOTHING, &c., FROM BOMBAY.

21. On the 10th October 1896 the Government of Bengal suggested to the Government of India by telegram the prohibition, under section 19 of Sea Customs Act, of exports of rags and second-hand clothing from Bombay. On the 22nd idem the Government of India sent the following reply :—

"Bombay Government report plague abating Bombay, and deprecate proposed stoppage export rags and second-hand clothing. No such measures taken for protection mufassal towns in that Presidency."

22. Immediately after this correspondence had been communicated to the Board, they directed the Health Officer of the Port of Calcutta to take steps to cause the rags and second-hand clothing coming from infected areas to be thoroughly disinfected. The Agents of the British India Steam Navigation Company and Asiatic Steam Navigation Company, who imported these articles, were also induced to wire instructions to their branch at Bombay forbidding the acceptance of cargoes of old clothes, rags or similar articles for transport by steamer to Calcutta. On the 17th December 1896 the Board, having received information of the arrival per S. S. *Chindwara* of a consignment of 65 packages of rags and 15 bags of paper-cuttings from Bombay, arranged to take the consignment over from the consignees and ordered its destruction by fire as a precaution against the possible introduction of plague to the port of Calcutta. The total cost incurred on this transaction amounted to Rs. 1,367-3, which was met from the Port Dues Fund.

23. Seeing that other similar, or even larger consignment of such goods might be received from infected areas, the Board again suggested to the Government of Bengal to move the Government of India to prohibit the exportation of rags and second-hand clothing from Bombay, since the action taken by that Government in October 1896, deprecating such measures, on the ground that plague was abating, could no longer be supported in view of the recrudescence of the disease. This representation of the Board led to the issue of notification No. 389S. R., dated the 22nd January 1897, by the Government of India, Finance and Commerce Department, prohibiting the export of rags and second-hand clothing from the infected ports.

IMPORTATION OF WHEAT AND FLOUR FROM BOMBAY.

24. Intimation was received through Messrs. Balmer, Lawrie & Co. of the arrival in Calcutta, in December 1896, by the S. S. *Matiana*, of a consignment of 216 bags of flour shipped from Bombay, but forwarded *viâ* Rangoon, the alleged object being to escape the notice of the Health Officer of the Port of Calcutta. That firm suggested that the importation of wheat and flour from Bombay should be prohibited on account of the danger of communicating the plague by their means. The Board, however, did not consider it necessary to take any action in the matter for the following reasons:—*Firstly*, because they saw no positive grounds for associating these articles with the dissemination of plague, the only fact supporting that view being that the lower flats of many houses in the Mandavi quarter of Bombay city where plague was then severe were used as grain stores; *secondly*, because at that time of extreme scarcity they hesitated to recommend the imposition of any restriction on the trade in food-grains; *thirdly*, because they were afraid that any restriction might lead the authorities of Foreign ports to place an embargo upon Indian produce generally. Accordingly the Board endeavoured, as before, to secure the co-operation of the steamer companies interested in this branch of trade, with a view to their refusing shipments of wheat and flour from plague-stricken ports in the interests both of the community and the trade of the port of Calcutta. It is very gratifying to state that the Agents of the British India and Asiatic Steam Navigation Companies, of the Hamburg line of steamers, and of the Hansa line of steamers at Calcutta, readily fell in with the views of the Board, and issued instructions accordingly to their Bombay and Karachi Agents to avoid cargoes of the nature described above. At their eighth meeting, held on the 30th January 1897, the Board having further considered the effect of these restrictions, and having obtained fuller information on the subject, withdrew their objection to consignments of wheat from non-affected localities being shipped at Bombay, on through railway receipts direct into steamers.

25. On the 1st March 1897, the Hon'ble Mr. Playfair, on behalf of the steamer companies, enquired whether, in view of the opinion given by Mr. Hankin that grain and flour do not permit of the existence of the bubonic microbe for more than about 5 to 6 days, the Board would withdraw their objection to the importation of wheat, and more specially flour, from Bombay. He also informed the Board that it was understood that the Bombay millers would guarantee that the flour was made only from wheat imported direct from up-country. At their meeting held on the 12th March 1897, the Board gave very careful consideration to this subject, and resolved that in deference to Mr. Hankin's opinion and in view of the guarantee of the Bombay millers, they would not press their objection to the importation of flour from Bombay.

26. Besides dealing with the matters noted above in detail, the Medical Board and their successors, the Plague Commission, were frequently consulted by Government, the Corporation of Calcutta, the Sanitary Commissioner, Bengal, and the Postal and Railway authorities, on the following matters:—

(1) Pilgrimage to Hedjaz.
(2) Inspection of passengers on the lines of Railways.
(3) Examination of female passengers.
(4) Prevention of the evasion of examination by passengers from infected areas.
(5) Arrangements for watching the movements of passengers from infected areas.
(6) Disinfection of mails from infected areas.
(7) Construction and working, etc., of observation camps.
(8) Disinfecting station and disinfecting appliances for the town of Calcutta.
(9) Framing of Plague Regulations.

CONSTITUTION AND CHANGES IN THE *PERSONNEL* OF THE PLAGUE COMMISSION.

27. In November 1897 the Government of Bengal modified the Plague Regulations in force at the time, in consequence of experience gained in combating plague in Western India, and took the opportunity to alter the designation of the Board, which had given rise to some misapprehension, from "Medical Board" to "Plague Commission," changing its constitution as follows:—

The Hon'ble H. H. Risley, C.I.E., Secretary to the Government of Bengal in the Medical Department	*President.*
The Hon'ble Sir Patrick Playfair, KT., C.I.E.	*Members.*
The Hon'ble M. C. Turner	
The President of the Bengal Chamber of Commerce ...	
The Secretary to the Government to Bengal in the Public Works Department	
The Inspector-General of Civil Hospitals, Bengal	
The Sanitary Commissioner, Bengal	
The Principal of the Medical College, Calcutta	
Brigade-Surgeon-Lieutenant-Colonel R. C. Sanders ...	
Brigade-Surgeon-Lieutenant-Colonel J. O'Brien	
Brigade-Surgeon-Lieutenant-Colonel C. H. Joubert ...	
Brigade-Surgeon-Lieutenant-Colonel E. G. Russell ...	
Surgeon-Lieutenant-Colonel J. Lewtas...	
Surgeon-Major A. W. D. Leahy	
The Inspector-General of Police, Bengal	
The Chairman of the Corporation of Calcutta	
Dr. Mohendra Lal Sircar	
Dr. Koylash Chunder Bose	
Maulavi Zuhir-ud-din Ahmed, Honorary Assistant Surgeon to His Excellency the Viceroy	
Mr. W. Banks Gwyther, Under-Secretary to the Government of Bengal in the Public Works Department	*Secretary.*

28. Owing to the transfer of Government servants, or absence from Calcutta, on leave or otherwise, of some of the gentlemen comprising the Commission, various changes were made in the *personnel*, as shown by the following notifications:—

President.

1. Under Government Notification No. 3087Medl, dated 17th May 1898, Mr. P. Nolan, Member of the Board of Revenue, L.P., acted as President during the absence of the Hon'ble H. H. Risley, C.I.E., with the head-quarters of Government at Darjeeling, viz., from 17th May to 12th July 1898.

2. Under Government Order No. 5047Medl., dated 17th August 1898, Colonel T. H. Hendley, C.I.E., I.M.S., has been acting as President, during the absence on deputation of the Hon'ble H. H. RISLEY, C.I.E.

Secretary.

1. Under Government Notification No. 2401Medl., dated 19th April 1898, Mr. E. R. Gardiner, Under-Secretary to the Government of Bengal, P. W. D., acted as Secretary *vice* Mr. W. Banks-Gwyther on furlough, from 1st April to 15th August 1898, with the exception of an interval of 1 month and 22 days, viz., from 21st May to 12th July 1898, when he went to Darjeeling with the head-quarters of Government and Mr. E. V. Levinge, I.C.S., Secretary to the Board of Revenue, officiated for him.

2. Under Government Order No. 4928Medl., dated 13th August 1898, Mr. J. W. Meares, M.I.E.E., F.R.A.S., Electrical Engineer to the Government of Bengal, has been acting as Secretary since the 16th August 1898.

Members.

1. Under Government Notification No. 2403Medl., dated 19th April 1898, the following gentlemen were appointed as members:—

Major R. H. Charles, I.M.S., *vice* Lieutenant-Colonel J. Lewtas, I.M.S.
Major H. W. Pilgrim, I.M.S., *vice* Major A. W. D. Leahy, I.M.S.
Lieutenant-Colonel R. D. Murray, I.M.S., *vice* Lieutenant-Colonel J. O'Brien, I.M.S.

At the present date the constitution of the Plague Commission is as follows:—

President.

Colonel T. H. Hendley, I.M.S., C.I.E., Inspector-General of Civil Hospitals, Bengal.

Members.

Sir Patrick Playfair, KT., C.I.E.
The Hon'ble M. C. Turner.
The President of the Bengal Chamber of Commerce.
The Chairman of the Corporation of Calcutta.
The Inspector-General of Police, Bengal.
The Secretary to the Government of Bengal, Public Works Department.
The Sanitary Commissioner, Bengal.
The Principal, Medical College, Calcutta.
Lieutenant-Colonel R. C. Sanders, M.D., I.M.S.
„ C. H. Joubert, M.B., I.M.S.
„ E. G. Russell, I.M.S.
„ R. D. Murray, I.M.S.
Major R. H. Charles, I.M.S.
„ H. W. Pilgrim, I.M.S.
Dr. Mahendra Lal Sarker, M.D., LL.D., C.I.E.
Rai Kailash Chandra Bose Bahadur, L.M.S.
Maulavi Zuhiruddin Ahmed, Honorary Assistant Surgeon to His Excellency the Viceroy.

Secretary.

Mr. J. W. Meares, M.I.E.E., F.R.A.S., Electrical Engineer to the Government of Bengal.

FUNCTIONS OF THE PLAGUE COMMISSION.

29. The functions of the Plague Commission were limited to giving advice to the Government, district and railway officials, heads of departments, municipalities, and District Boards, as to the measures to be taken in order to prevent the outbreak and check the spread of bubonic plague within the territories subject to the administration of His Honour the Lieutenant-Governor of Bengal, and discharging such further duties as might at any time be assigned to them.

MEETINGS OF THE PLAGUE COMMISSION.

30. The Commission has held only two regular sittings* up to the present date, viz., 8th December 1897 and 5th February 1898. At the first sitting the President explained fully the chief provisions of the Venice Convention, and dealt also with the existing or necessary plague regulations on the subject of (1) segregation; (2) cleansing of municipalities; (3) re-booking by railway passengers in order to evade detection; (4) detention of suspected passengers by railway; (5) quarantine and inspection of passengers by sea. He also informed the meeting that several more "inspection stations" were being selected at suitable positions on the railways leading into Calcutta. The Inspector-General of Police, Bengal, then explained the organisation and work of the Railway Police as regards plague operations, and especially as to the prevention of re-booking. A discussion then followed on the points raised. At the second siting the Commission considered the scheme prepared by the Department of the Health Officer to the Corporation of Calcutta for dealing with an outbreak of plague should such occur in the town. After some discussion the scheme was referred back to the Corporation.

SCHEMES FOR PUBLIC, FAMILY, CASTE HOSPITALS AND CAMPS, MEDICAL STAFF, MEDICINES AND DISINFECTANTS, &c., FOR MUNICIPALITIES IN BENGAL.

31. Under instructions contained in paragraph 7 of the Bengal Government Resolution No. 1465T.M., dated the 10th November 1897, and Rule 3, of

**Vide* Appendix VI.

Plague Regulation No. 10, dated the 8th February 1898, schemes for those municipalities enumerated below, which would have come into force in the event of plague breaking out within their limits, were considered and approved by the Commission. The Deputy Commissioner of Darjeeling did not submit any detailed scheme, but reported that in Darjeeling and Kurseong towns and Jalapahar and Lebong cantonments materials were ready for the construction of hospitals, &c., at a short notice. The Commissioner of the Bhagalpur Division also did not submit any detailed scheme, but reported the arrangements which had already been made in the municipalities within his Division, and the Commission approved generally of those arrangements.

Name of municipalities of which schemes were considered.	Names of districts in which the municipalities are situated.	Names of municipalities of which schemes were considered.	Names of districts in which the municipalities are situated.
1	2	3	4
Cossipore-Chitpur, Maniktola, Baranagore — Group I	24-Parganas.	Arrah, Buxar, Dumraon, Sasaram	Shahabad.
Naihati, Garulia — Group II	24-Parganas.	Chapra	Saran.
North Barrackpore, Titagar, South Barrackpore — Group III	24-Parganas.	Motihari	Champaran.
North Dum-Dum, South Dum-Dum, Barasat — Group IV	24-Parganas.	Darbhanga, Madhubani, Samastipur, Roserah	Darbhanga.
South Suburban — Group V	24-Parganas.	Cuttack, Jajpur, Kendrapara	Cuttack.
Garden Reach ... — Group VI	24-Parganas.	Puri	Puri.
Jessore	Jessore.	Hazaribagh, Chatra	Hazaribagh.
Kotechandpore ...	Jessore.	Ranchi, Lohardaga, Doranda (*cantonment*)	Lohardaga.
Patna	Patna.	Daltonganj	Palamau.
Bihar	Patna.	Purulia, Jhalda, Raghunathpur	Manbhum.
Dinapore	Patna.	Chaibassa	Singhbhum.
Barh	Patna.		
Gaya	Gaya.		
Tikari	Gaya.		
Daudnagar	Gaya.		

FAMILY, CASTE, AND CLASS HOSPITALS AND CAMPS.

32. Under clause 2, Rule 46, of Plague Regulation No. 9, dated the 10th November 1897, the power of granting licenses for hospitals and camps for the residents of Calcutta was entrusted to the Plague Commission. Two hundred and five applications were received by the Commission, of which 110 were for hospitals in premises situated within Calcutta, and 95 for hospitals in garden houses situated outside town limits.

On the appearance of plague in Calcutta large numbers of applications for family plague hospitals began to flow in, and as the Corporation had then a suitable establishment of its own, it was decided to send such applications to them for disposal, after enquiry through the special plague doctors.

The applications from the residents of the city for hospitals in suburban areas were also transferred to the local Health Officer for enquiry and disposal.

The statement below shows the cases disposed of by the Commission :—

	APPLICATIONS FROM RESIDENTS OF CALCUTTA, FOR FAMILY PLAGUE HOSPITALS AND CAMPS.		
	In premises situated within Calcutta.	In garden houses outside town limits.	Total.
1	2	3	4
Number of cases in which licenses have been granted.	8	71	79
Number of applications rejected in consequence of unsuitability of sites or buildings.	13	8	21
Transferred for disposal. To the Corporation of Calcutta.	86	...	90
Transferred for disposal. To the Magistrate of Howrah.	...	4	
Number of cases in which no formal action was taken owing to failure of applicants to supply information called for.	3	12	15
Total ...	110	95	205

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APPENDIX I.

GOVERNMENT RESOLUTION APPOINTING THE MEDICAL BOARD.

APPENDIX I.

No. 937T.—M., dated Darjeeling, the 10th October 1896.

RESOLUTION—By the Government of Bengal, Municipal Department.

READ—

Letter from Chairman, Corporation of Calcutta, No. 4042, dated 25th September 1896.
Letter from Chairman, Corporation of Calcutta, No. 4056, dated 26th September 1896.
Telegram to Chief Secretary to the Government of Bombay, dated 28th September 1896.
Telegram from Secretary to the Government of Bombay, General Department (repeated), dated 29th September 1896.
Telegram from His Excellency the Governor of Bombay, dated 30th September 1896.
Letter to Chairman of Corporation of Calcutta, No. 770T.—M., dated 30th September 1896.
Telegram to His Excellency the Governor of Bombay, dated 1st October 1896.
Telegram to Secretary to Chief Commissioner, Central Provinces, dated 1st October 1896.
Telegram to Chief Secretary to the Government of the North-Western Provinces and Oudh, dated 1st October 1896.
Telegram from Secretary to the Government of Bombay, General Department, dated 1st October 1896.
Telegram from His Excellency the Governor of Bombay, dated 2nd October 1896.
Telegram from Secretary to the Government of the North-Western Provinces and Oudh, dated 5th October 1896.
Telegram from His Excellency the Governor of Bombay, dated 5th October 1896.
Telegram from Chief Secretary to the Chief Commissioner, Central Provinces, dated 5th October 1896.
Letter to Magistrate of Burdwan, No. 884T.—M., dated 6th October 1896,
Telegrams, dated 6th October 1896, to—

(1) The Secretary to the Chief Commissioner of the Central Provinces.
(2) The Chairman of the Corporation of Calcutta.

Letter No. 887T.—M., dated 6th October 1896, to the Agent, East Indian Railway.
Letter No. 888T.—M., dated 6th October 1896, to the Agent, Bengal-Nagpur Railway.
Telegram from Chairman, Corporation of Calcutta, dated 7th October 1896.
Telegram from Chairman, Corporation of Calcutta, dated 8th October 1896.
Telegram to Chairman, Corporation of Calcutta, dated 8th October 1896.
Telegram from Magistrate of Howrah, dated 9th October 1896.
Telegram to Magistrate of Howrah, dated 9th October 1896.
Telegram from Corporation of Calcutta, dated 9th October 1896.
Telegram from Magistrate of Howrah, dated 9th October 1896.
Telegram from Corporation, Calcutta, dated 9th October 1896.
Telegram to Chairman, Corporation of Calcutta, dated 10th October 1896,
Telegram to Chairman, Howrah Municipality, dated 10th October 1896.

In the Government letter No. 770T.—M. of the 30th September, a copy of which is annexed to this Resolution, the Corporation of Calcutta were addressed on the subject of the reported outbreak of plague in Bombay, and it was suggested that the following measures should be taken under sections 321 to 334 of the Calcutta Municipal Act :—

(1) To declare bubonic plague or any form of typhus fever with glandular swellings to be a dangerous disease, regarding any case of which information should at once be communicated to the Commissioners or their Health Officer under section 321.
(2) To select a site for a temporary Plague Hospital away from the main thoroughfares, and to arrange for its prompt erection, should the need arise.
(3) To provide special carts for the conveyance of cases to Hospital, and to arrange for the disinfection of both carts and drivers.
(4) To divide the Town into Sanitary Circles of manageable size, and to place in charge of each a Medical Inspector with full powers to carry out the measures ordered by the Commissioners or Government for preventing the spread of the disease.
(5) To draw up Regulations under section 334 of the Act, in order to give effect to such special measures as might be necessary to prevent, check or mitigate an outbreak of plague.

The Corporation were further informed that the Government would be prepared to appoint a Medical Board to assist the Corporation in devising measures to deal with the disease.

2. While trusting that no necessity for the above measures would arise, the Lieutenant-Governor expressed his entire approval of the steps taken under the Commissioners' orders to give special attention to the cleansing and sanitation of Calcutta. A copy of the letter was sent to the Commissioner of Burdwan, who was directed to instruct the Magistrate of Howrah to move the Municipality to take the necessary action to cleanse and sanitate the town.

3. A case of mild bubonic plague is now reported to have occurred in Howrah, the patient being a Eurasian lad of 17, who arrived from Bombay on the 26th September, and is believed (though this is not certain) to have brought the disease with him. It may be hoped that the case is an isolated one, and that no general outbreak of the disease will take place. But the occurrence of even a single case in a crowded area where the sanitary conditions are

such as to favour the spread of contagion, if not actually to generate the disease, convinces the Lieutenant-Governor that the time has now come to adopt further preventive measures.

4. It has accordingly been decided to appoint the following gentlemen to form a Medical Board for the purpose of determining the action to be taken by all executive authorities, whether official or municipal, with the object of preventing and checking the plague throughout Bengal:—

Hon'ble H. H. Risley, C.I.E., Secretary to Government, Financial and Municipal Departments	*President.*
Hon'ble P. Playfair, C.I.E.	*Members.*
Hon'ble J. G. H. Glass, C.I.E., Chief Engineer	
Surgeon-Colonel Ross, Inspector-General of Civil Hospitals	
Surgeon-Captain Dyson, Sanitary Commissioner	
Dr. Mahendra Lal Sircar, C.I.E.	
Surgeon-Captain Robson-Scott, Officiating Deputy Sanitary Commissioner, Presidency Circle	*Secretary.*

5. All cases of illness which are believed to be plague should at once be reported to the Board by the Magistrate of the district where they occur, and in Calcutta by the Health Officer of the Corporation. The orders issued by the Board on matters affecting health and conservancy should be deemed to be the orders of Government and carried out with all possible despatch by all executive authorities. Steps will hereafter be taken, if necessary, to legalise all action taken during the present emergency. Nothing should meantime prevent the Board from ordering, or the executive authorities from carrying out, any reasonable measure of precaution, segregation or disinfection which may appear called for.

6. The areas which the Board will have in the first instance to deal with in order to arrest the spread of the plague are the following:—

(1) The Town of Calcutta.
(2) The Port of Calcutta.
(3) The Municipality of Howrah.
(4) The small Municipalities adjacent to Calcutta and Howrah.
(5) The lines of railway.

7. *The Town of Calcutta.*—The plague has already been declared to be a dangerous disease under section 321 of the Municipal Act, and it is further understood that the measures indicated in the Government letter of 30th September have already been adopted, or are in course of adoption by the Corporation. The Commissioners have asked the Government to select for them a Chief Superintendent to organise and control the conservancy and nuisance branch of the Health Department for three months on a salary of Rs. 1,000 a month. Dr. Banks, Civil Medical Officer of Puri, who possesses, in a high degree, the requisite qualifications, has been appointed to the post, and directed by telegram to join at once. Sites have been selected in Maniktola for an isolation hospital and a special burning ghat and burial ground for plague patients. The town is being divided by the Health Officer into Sanitary Circles, and regulations under section 334 of the Act are about to be submitted for the sanction of Government. The Lieutenant-Governor feels sure that the Commissioners, the Executive Officers of the Corporation, and their subordinates will work cordially with the Medical Board and carry out promptly and fully all the recommendations of that body.

8. *The Municipality of Howrah.*—The Chairman of the Municipality has been instructed by telegram to isolate the patient now suffering from the plague, to destroy his clothes, and to disinfect the house in which he has been living. The Municipality have asked by telegram for the appointment of an officer of the rank of Surgeon-Captain as Health Officer of the town on a salary of Rs. 1,500 a month and carriage allowanee; but the Lieutenant-Governor considers that the needs of Howrah can best be met by transferring the present Civil Surgeon, who is in weak health, to a lighter station, and deputing a younger officer, Surgeon-Major Walsh, to carry on the combined duties of Civil Surgeon and of Health Officer with the assistance of an experienced supervisor of the Public Works Department, who will receive Rs. 500 a month with horse allowance and house rent. The Deputy Sanitary Commissioner of the Western Circle was ordered to Howrah to assist in sanitary measures two days before the case of plague was reported to Government.

9. *The adjacent Municipalities.*—The Chairman of the Municipalities noted in the margin should now report to the Medical Board, through the Magistrate of the district, what steps they propose to take to prevent the plague spreading to their jurisdictions. The Deputy Sanitary Commissioners will be directed to visit these Municipalities as soon as possible, and to explain to the Chairmen personally what ought to be done.

Hooghly-Chinsura	In Hooghly district.
Serampore	
Uttarpara	
Baidyabati	
Bhadreswar	
Kotrang	
Bansberia	
Bally	In Howrah district.
Cossipore-Chitpur	In the 24-Parganas.
Maniktola	
Baranagar	
South Suburban	
South Dum-Dum	
North Dum-Dum	
South Barrackpore	
North Barrackpore	
Baraset	
Naihati	

10. *The Port of Calcutta.*—The Government of India have been moved by telegram to sanction the introduction, with such modifications as may be necessary, of the revised rules for quarantine against plague which were introduced in August 1894 for the protection of Calcutta from the importation of plague from Hong-Kong. It has also been suggested that under section 19 of

the Sea Customs Act the export of rags and second-hand clothing from Bombay should be prohibited. Steps are being taken to provide accommodation for plague patients near the quarantine anchorage at Diamond Harbour, and all suspected vessels will be carefully examined and disinfected by the Port Health Officer before communication with the shore is permitted.

11. *The lines of Railway.*—Under section 71 of the Railway Act, IX of 1890, a railway administration may refuse to carry persons suffering from any infectious or contagious disease, and under section 117 any such person may be removed by a railway servant from the carriage in which he is travelling. On the 1st October, the Governor of Bombay was asked by telegram whether, in event of the disease increasing, he would be prepared to move the Railway Company to prevent suspected persons from leaving Bombay by rail; and on the next day, His Excellency replied that the Municipal and Railway authorities were in consultation, and that if the disease increased, the necessary measures would be taken. The East Indian Railway have already posted native doctors at Asansol, Allahabad and Tundla to scrutinise all passengers, especially those coming from Bombay, while tickets are being checked. The Assistant Superintendent of Emigration at Raniganj and Asansol has been instructed to give all possible assistance to the railway officials in the matter. The Government of the North-Western Provinces and Oudh, and the Administration of the Central Provinces, have also been addressed on the subject.

ORDER.—Ordered that copies of the Resolution be forwarded to the members of the Medical Board named in paragraph 4; the Chairman, Calcutta Corporation; the Commissioner of Police, Calcutta; the Bengal Chamber of Commerce; the Trades Association, Calcutta; all Commissioners of Divisions; all Magistrates (direct), and to the Marine Department.

Ordered also—That the Resolution be communicated to the Government of India, Home Department.

Ordered furtner—That the Resolution be communicated to newspapers and published in the *Calcutta Gazette*.

Circular No. 22T.—M., dated Darjeeling, the 10th October 1896.

Memo.—by B. FOLEY, Under-Secretary to the Government of Bengal, Municipal Department.

COPY forwarded to

No. 770T.—M., dated Darjeeling, the 30th September 1896.

From—H. H. RISLEY, ESQ., C.I.E., Secy. to the Govt. of Bengal, Munpl. Dept.,
To—The Chairman of the Corporation of the Town of Calcutta.

I AM directed to acknowledge receipt of your letters noted in the margin, regarding the reported outbreak of plague in Bombay, and in reply to forward, for the information of the Commissioners, copies of a telegram despatched by this Government to the Government of Bombay, and of the replies thereto. The telegram of to-day's date from His Excellency the Governor shows that the character of the disease is still open to question; that active measures are being taken by the Bombay Government to deal with it; and that all unnecessary panic or excitement regarding it is much to be deprecated At the same time it is obviously desirable to take every reasonable precaution to prevent any outbreak of the disease in Calcutta, and to detect at the earliest possible moment any cases that may occur. Under the provisions of section 37 (5) (*h*) of Bengal Act II of 1888, the preventing or checking the spread of dangerous disease is one of the obligatory duties of the Municipality; and sections 321 to 334 of the Act contain the detailed provisions of law on the subject. The Lieutenant-Governor will be quite ready to sanction any measures which the Commissioners may desire to initiate under those sections. To begin with, it appears desirable to declare that bubonic plague, or any form of typhus fever with glandular swellings, is a dangerous disease, regarding any case of which information shall at once be communicated to the Commissioners or their Health Officer under section 321.

No. 4042, dated the 25th September 1896.
No. 4056, dated the 26th September 1896.

2. The next step is for the Commissioners to select a site for a temporary Plague Hospital away from the main thoroughfares, and to arrange for its prompt erection should the need arise. The Hospital should be built of matting and T-iron or bamboos in blocks to contain 10 patients each. Provisional contracts could no doubt be arranged for the rapid construction of such a building if required.

3. I am to say, with reference to a query irregularly addressed by the Health Officer to Government direct, that the Campbell Hospital cannot be used for the purposes of a Plague Hospital.

4. The Commissioners should, if the disease breaks out, have special carts (drawn by bullocks and specially marked) provided, one at each police-station, for the conveyance of cases to Hospital. Provision for disinfecting both carts and drivers in the vicinity of the Hospital after each journey would be necessary.

5. If the disease appears, the Town will have to be divided into Sanitary Circles of manageable size, and a Medical Inspector placed in charge of each, with full powers to carry out the measures that may be ordered by the Commissioners or Government for preventing the spread of the disease. Action under section 334 of the Act will then be

necessary, and the Government will be prepared to appoint a Medical Board to assist the Municipality in devising measures to deal with the outbreak.

6. The Lieutenant-Governor trusts, however, that no necessity for such measures will arise. Meantime, he entirely approves of the steps that are being taken under the Commissioners' orders to give special attention to the cleansing and sanitation of the Town. The Municipality of Howrah will be directed to take similar steps.

7. It is premature at present to propose any interference with, or medical inspection of, railway passengers. Orders on the subject of arrivals by sea will be issued by the Marine Department.

APPENDIX II.

PROCEEDINGS OF THE MEETINGS OF THE MEDICAL BOARD.

APPENDIX II.

FIRST MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937 T.—M., dated 10th October 1896, at a meeting held at Calcutta on Tuesday, the 20th October 1896.

PRESENT:

HON'BLE H. H. RISLEY, C.I.E.	*President.*
HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
HON'BLE J. G. H. GLASS, C.I.E. Chief Engineer	
SURGEON-COLONEL ROSS, Inspector-General of Civil Hospitals ...	
SURGEON-LIEUTENANT-COLONEL D. D. CUNNINGHAM, C.I.E., F.R.S. ...	
SURGEON-CAPTAIN H. J. DYSON, Sanitary Commissioner	
DR. MAHENDRA LAL SIRCAR, C.I.E.	

THE Board considered the medical history of thirteen reported cases of fever accompanied with swelling of the lymphatic glands, and were informed by Surgeon-Lieutenant-Colonel D. D. Cunningham that in his opinion the bacteriological data at present available did not point to any certain conclusion as to the character of the prevailing disease. Having regard, however, to the undoubted prevalence of plague in Bombay, and to the extremely insanitary condition of Calcutta and the adjacent municipalities, the Board desire to express a strong opinion that immediate steps should be taken to improve the conservancy of Calcutta in every possible way, and that the draft regulations drawn up by the Health Officer under section 334 of the Act should now be passed by the Commissioners as modified by the Medical Board in the copy annexed.

The Board also discussed the sanitary condition of Howrah with the Chairman of the Municipality, who attended the meeting, and expressed themselves as satisfied with the measures which are being carried out there under the orders of the Chairman and the Health Officer.

The state of the smaller municipalities adjacent to Calcutta and Howrah is being enquired into under the orders of the Sanitary Commissioner, and the reports will be considered at a subsequent meeting of the Board.

Also read a letter from Dr. Cobb to His Honour the Lieutenant-Governor, stating that plague has been endemic amongst the soldiers of the Shropshire Regiment since their return from Hong-Kong in 1895. Read also a report on non-venereal bubo from the B. M. Journal.

The Board sat from 3 to 6 P.M., and adjourned till Thursday morning.

SECOND MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937 T.—M., dated the 10th October 1896, at the second meeting held at Calcutta on Thursday, the 22nd October 1896.

PRESENT:

HON'BLE H. H. RISLEY, C.I.E., ...	*President.*
HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
HON'BLE J. G. H. GLASS, C.I.E., Chief Engineer, Bengal ...	
SURGEON-COLONEL G. C. KOSS, M.D., Inspector-General of Civil Hospitals, Bengal	
SURGEON-LIEUTENANT-COLONEL D. D. CUNNINGHAM, F.R.S., C.I.E.	
SURGEON-CAPTAIN H. J. DYSON, Sanitary Commissioner for Bengal.	
DR MOHENDRA LAL SIRCAR, C.I.E.	

THE Board considered the question of dividing Calcutta into sanitary circles of manageable sizes, and the Deputy Sanitary Commissioners were detailed to inspect and report on the insanitary state of the town.

The above arrangements were published in the Calcutta newspapers. The Board considered the medical history of a list of suspected cases of plague, which were reported as having occurred in Calcutta.

No fresh cases have occurred in Howrah.

The Board considered that there could be no objections to Mr. J. Cotta being removed from hospital, and the Civil Surgeon of Howrah should use his own discretion about such cases. The Civil Surgeon to be instructed accordingly.

A report was read, stating that the Maniktola cases were doing well.

The Civil Surgeon of Chittagong to be instructed regarding Quarantine Rules, and a letter was accordingly drafted.

Read—A letter from the Principal Medical Officer, reporting cases of inflammation of lymph glands, which have occurred in the Station Hospital at Calcutta during the period 1890-96.

It was resolved that the Secretary should obtain similar reports from as far back as possible from the General, Medical College, and Mayo Hospitals.

The Quarantine Rules were discussed.

THIRD MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937 T.—M., dated 10th October 1896, at the third meeting held in Calcutta on Monday, the 30th November 1896.

PRESENT:

HON'BLE H. H. RISLEY, C.I.E.	*President.*
HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
HON'BLE J. G. H. GLASS, C.I.E., Chief Engineer, Bengal ...	
SURGEON-COLONEL G. C. ROSS, M.D., Inspector-General of Civil Hospitals, Bengal.	
SURGEON-LIEUTENANT-COLONEL D. D. CUNNINGHAM, F.R.S., C.I.E.	
SURGEON-CAPTAIN H. J. DYSON, Sanitary Commissioner, Bengal.	

WITH reference to an enquiry from the Government of India whether any true cases of, bubonic plague had actually occurred in Calcutta, the Board prepared a note on the subject to which was appended a full account of the reported and suspected cases of plague; and they resolved that this note, representing their views on the subject, together with the appendix to it indicated above, should be forwarded to the Government of Bengal, with their covering letter No. 52, dated 30th November 1896, and that copies of this letter and of the enclosure should be forwarded to the—

1. Chairman of the Corporation of Calcutta.
2. Secretary to the Chamber of Commerce.
3. Ditto Trades' Association.
4. Ditto British Indian Association.
5. Manager, Reuters' Telegram Company, Limited.
6. Mr. Hensman, Correspondent for *Times* Newspaper, London.
7. Secretary to the Bengal National Chamber.
8. Editor of the *Englishman.*
9. Ditto *Statesman.*
10. Ditto *Indian Daily News.*
11. Editor of the *Indian Mirror.*
12. Ditto *Hindu Patriot.*
13. Ditto *Amrita Bazar Patrika.*
14. Ditto *Pioneer.*
15. Secretary to the Upper India Chamber of Commerce, Cawnpore.
16. Editor of the *Lancet.*
17. Ditto *British Medical Journal.*
18. Ditto *Indian Medical Gazette.*
19. Consul-General, America.
20. Ditto, Austria-Hungary Imperial and Royal Consulate.
21. Ditto, Belgium.
22. Ditto, Denmark.
23. Ditto, France.
24. Ditto, German Empire.
25. Ditto, Greece.
26. Ditto, Italy.
27. Ditto, Netherlands.
28. Consul, Persia.
29. Vice-Consul, Portugal.
30. Consul, Republic Oriental of Uruguay (South America).
31. Consul, Siam.
32. Vice-Cunsul, Spain.
33. Consul-General, Swedish-Norwegian Consulate.
34. Commissioner of Police, Calcutta.
35. Inspector-General of Civil Hospitals, Bengal.
36. Sanitary Commissioner, Bengal.

Two hundred copies of the above to be sent to the President of the Chamber of Commerce for circulation.

2. The Board then considered in detail the report on the sanitary condition of Calcutta, and addressed a letter embodying their views on the subject to the Government of Bengal, sending a copy to the Corporation for the necessary action.

Two hundred copies of the reports on the sanitary condition of Calcutta to be forwarded to the President of the Chamber of Commerce.

FOURTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated 10th October 1896, at their fourth meeting, held in Calcutta on Thursday, the 3rd December 1896.

PRESENT:

HON'BLE H. H. RISLEY, C.I.E.	*President*
HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
HON'BLE J. G. H. GLASS, C.I.E., Chief Engineer, Bengal	
SURGEON-COLONEL G. C. ROSS, M.D., Inspector-General of Civil Hospitals, Bengal.	
SURGEON-CAPTAIN H. J. DYSON, Sanitary Commissioner, Bengal.	

1. DR. Banks was examined, and notes of the questions put to him and his answers to those questions were taken in short-hand by Mr. Kirkpatrick, whose services had been secured for the meeting.

Dr. Banks' examination was not concluded when the Board adjourned.

FIFTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., datea 10th October 1896, at their fifth meeting, held in Calcutta on Monday, the 7th December 1896.

PRESENT:

HON'BLE H. H. RISLEY, C.I.E.	*President.*
HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
HON'BLE J. G. H. GLASS, C.I.E., Chief Engineer, Bengal	
SURGEON-COLONEL G. C. ROSS, M.D., Inspector-General of Civil Hospitals, Bengal.	
SURGEON-CAPTAIN H. J. DYSON, Sanitary Commissioner, Bengal.	

DR. Banks' examination was continued, and his answers, as at the last meeting, were taken down in short-hand by Mr. Kirkpatrick.

Dr. Banks' examination was concluded at this meeting.

The following papers were then brought up before the Board, and the Secretary was directed to forward them to the Corporation:—

(1) Letter, dated the 2nd December 1896, from K. S. Macdonald, Esq., regarding nuisance in connection with a public urinal in Beadon Street and Cornwallis Street junction.

(2) Letter, dated the 4th December 1896, from the Managing Director, Great Eastern Hotel, regarding the construction of latrines and urinals for the servants of the Hotel.

(3) An application from certain residents of the Mati Lal Seal's Street and Dr. Peck's inspection report on the Mati Lal Seal's market.

(4) Letter, dated the 7th December 1896, from Babu Nagendra Nath Chatterjee and ten others, of Bhawanipur, to remove the insanitary condition of certain tank, and to extend the Badiarpara Road to Kalighat.

SIXTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, 10th October 1896, at their sixth meeting held in Calcutta on Friday, the 11th December 1896.

PRESENT:

HON'BLE H. H. RISLEY, C.I.E.	*President.*
HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
HON'BLE J. G. H. GLASS, C.I.E., Chief Engineer, Bengal... ...	
SURGEON-COLONEL G. C. ROSS, M.D., Inspector-General of Civil Hospitals, Bengal.	
SURGEON-CAPTAIN H. J. DYSON, Sanitary Commissioner, Bengal ...	

THE following papers were brought up for the consideration of the Board, and it was decided to forward them to the Corporation for disposal, the memorialists being informed of the action taken:—

(1) Memorial of the inhabitants of Katuakhoti road, Bhawanipur, dated the 20th October 1896, regarding the erection of certain Surki Mills in their neighbourhood.

(2) Letter, dated the 2nd December 1896, from Babu Hurry Charan Bose and some other rate-payers of Bhawanipur, praying for the opening out of a lane.

(3) Letter, dated the 28th November 1896, from Babu K. N. Sen, complaining of certain alleged maladministration of the Calcutta Corporation.

With reference to the sanitary condition of Dacca and the proposal of the Municipality to borrow Rs. 50,000, the Hon'ble Mr. Glass observed that the Dacca water-works were in an unsatisfactory condition. A report by Dr. Evans, Civil Surgeon of Dacca, was also read, and the Hon'ble Mr. Risley made reference to his note of an inspection of Dacca made by him in 1891, in which the comments were similar to those in the report received from Dr. Evans. It was decided that before any definite action is taken, the result of the visit which the Hon'ble Mr. Glass and Dr. Dyson propose making to Dacca should be awaited.

With reference to a letter from Babu N. C. Bose (marked 1), and placed with papers in file No. $\frac{25}{\text{M.B.}}$, regarding the use of Beadon Square for the meetings of the National Congress, it was decided to address the Corporation in the matter, a copy of the letter being sent to the East Indian Railway and to Babu N. C. Bose.

With reference to the sanitation of Howrah, the Hon'ble Mr. Risley's suggestion in the file, dated 10th December, was agreed to.

With regard to the subject of rag-picking, it was decided that no further action need be taken at present.

As regards the importation of rags and second-hand clothing from Bombay, it was decided to take no further action pending the result of enquiries proposed to be made by the Hon'ble Mr. Playfair, who took the file on the subject (No. $\frac{15}{\text{M.B.}}$) away with him.

In connection with the subject of accommodation at the proposed Quarantine Plague Hospital at Diamond Harbour, it was decided to address the Marine Department in the terms of Mr. Glass's note in this file (No $\frac{16}{\text{M.B.}}$), dated 10th December 1896.

With reference to the Bediapara road scheme, it was decided that it be included in a general scheme for opening up Calcutta.

It was decided to send file No. $\frac{12}{\text{M.B.}}$ regarding mortality and sickness among rats in Calcutta to Dr. D. D. Cunningham for remark.

SEVENTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, 10th October 1896, at their seventh meeting, held in Calcutta on Monday, 18th January 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	
SURGEON-COLONEL G. C. ROSS, M.D., Inspector-General of Civil Hospitals.	
SURGEON-CAPTAIN H. J. DYSON, Sanitary Commissioner	
MR. W. BANKS GWYTHER	*Secretary.*

THE steps taken by the several municipalities adjacent to Calcutta to prevent the introduction of plague were discussed. The papers containing their reports on the subject had been printed and circulated to members.

The sanitary condition of the above municipalities as detailed in the printed reports submitted by the sanitary officers of Government was considered by the Board, orders being passed separately in regard to each municipality.

After transacting other minor business the Board adjourned.

EIGHTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, 10th October 1896, at their eighth meeting, held in Calcutta on Saturday, 30th January 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	
SURGEON-COLONEL G. C. ROSS	
BRIG.-SURGN. LIEUT.-COL. D. D. CUNNINGHAM, C.I.E. ...	
SURGEON-CAPTAIN H. J. DYSON	
MR. W. BANKS GWYTHER	*Secretary.*

I. COPIES of the draft Bill presented at the Imperial Legislative Council on Thursday, the 28th January 1897, having for its object the better prevention of the spread of epidemic diseases, had been circulated to members, and the clauses were discussed *seriatim* and the recommendations of the Board decided upon with a view to such additions and alterations as were thought desirable by them being reported to the Legislative Department of the Government of India in time for the sitting of the Committee on the Bill, which had been fixed for Monday, the 1st February.

II. Considered a letter from the Secretary to the Bengal Chamber of Commerce, forwarding, for the information of the Board, copy of a letter from Messrs. Thomson, Lehzen and Company and other shippers of hides, drawing attention to the inconvenience and loss that must result from the action of the Italian and French Governments in prohibiting the importation of these goods from India in consequence of the outbreak of plague in Bombay and Karachi, and asking whether the Board are prepared to make any recommendation to Government in the matter.

The Board were of opinion that hides which have been treated by the arsenical process would not form a medium for conveying infection; but they were not prepared to say that dry-salted hides are possessed of the same immunity.

Resolved.—That a copy of the Chamber's letter and of its enclosures be submitted to the Local Government with the above opinion of the Board and with the suggestion that the Government of India be moved to induce the Italian and French Governments to withdraw their prohibition in the case of hides which have been cured with arsenic.

III. The question of importation of wheat and flour was also discussed, and it was resolved that the steamer companies interested in this branch of trade, who have co-operated with the Board, be thanked for the readiness with which they have fallen in with the views of the Board, and that they be informed that, on having reconsidered the subject and obtained fuller information on it, the Board had withdrawn their objection to consignments of wheat from non-affected localities being shipped at Bombay on through-railway receipts direct into steamers. As regards the importation of flour, the question continued to engage the attention of the Board.

NINTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No 937T.—M., dated Darjeeling, 10th October 1896, at their ninth meeting, held in Calcutta on Saturday, the 6th February 1897, at which His Honour the Lieutenant-Governor had signified his intention of being present.

PRESENT:

THE HON'BLE SIR ALEXANDER MACKENZIE, Lieutenant-Governor ...	*President.*
THE HON'BLE H. H. RISLEY, C.I.E.	*Members.*
THE HON'BLE P. PLAYFAIR, C.I.E.	
THE HON'BLE J. G. H. GLASS, C.I.E.	
SURGEON-COLONEL B. FRANKLIN, C.I.E.	
SURGEON-CAPTAIN H. J. DYSON	
MR. W. BANKS GWYTHER	*Secretary.*

THE following gentlemen were also present by invitation :—

COLONEL R. GARDINER, Agent, East Indian Railway.
MR. S. FINNEY, Manager, Eastern Bengal State Railway.
DR. GRIFFITHS, Chief Medical Officer, East Indian Railway.
SIR JOHN LAMBERT, K.C.I.E., Commissioner of Police.
H. C. WILLIAMS, ESQ., Chairman, Calcutta Corporation.
DR. SIMPSON, Health Officer of Calcutta.
DR. BANKS, Chief Superintendent of Conservancy, Calcutta.

The general question relating to the inspection of travellers and the formation of camps of observation for "suspects" and of detention and isolation for plague cases was discussed.

The draft plague Notifications Nos. 1 to 5 were next considered and settled by the Board in consultation with the other gentlemen present by invitation.

TENTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, 10th October 1896, at their tenth meeting, held in Calcutta on Wednesday, the 10th February 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	...	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	...	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	...	
SURGEON-COLONEL B. FRANKLIN, C.I.E.	...	
SURGEON-CAPTAIN H. J. DYSON	...	
MR. W. BANKS GWYTHER	...	*Secretary.*

THE five notifications in regard to plague, which had been drawn up under the authority of the Epidemic Diseases Act, were published in the *Calcutta Gazette* of this day, and the Board assembled to consider the practical steps to be taken to give effect to them. Dr. Dyson reported the result of his visit to Khana Junction on the evening of Saturday, the 6th instant, and the proposals for the formation of a camp there for suspects, contact cases, and plague cases. The arrangements as regards the staff were also described.

ELEVENTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, 10th October 1896, at their eleventh meeting, held in Calcutta on Thursday, 11th February 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	...	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	...	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	...	
SURGEON-COLONEL B. FRANKLIN, C.I.E.	...	
SURGEON-CAPTAIN H. J. DYSON	...	
MR. W. BANKS GWYTHER ...	...	*Secretary.*

THE Medical Board sat from 11 A.M. to 2 P.M., and dealt with the following questions:—

I. Considered—

(1) a letter from the East Indian Railway (No. 1527, dated 10th February 1897), recommending medical inspection of passengers at Mokameh, Bankipore, Dildarnagar, Naihati, Sahibganj, and Nawadih;

(2) a telegram, dated 9th February 1897, from the Magistrate of Patna, reporting that the Municipality wanted inspection and quarantine at Dinapore; and

(3) letter No. 1550, dated 11th February 1897, from the Agent, East Indian Railway, expressing his views on the Patna Magistrate's telegram, which was referred to him.

It was decided to ask the Agent to arrange with the Magistrate and Civil Surgeon of Patna to inspect medically all passengers for Bankipore and Patna at Bankipore, and to suggest that the best way of making this effective would be to allow booking of passengers for Patna to Bankipore, so that people would have to get out there.

II. The question (*a*) of Mecca pilgrims and (*b*) of passengers to Natal was discussed at great length. Mr. J. P. Hewett, Secretary, Home Department, was present most of the time.

(*a*) As to the pilgrimage question, the Board adhered to their opinion that, in view of the great danger involved in diverting to Calcutta the large body of pilgrims who would in ordinary years have sailed from Bombay, pilgrimage from Calcutta be suspended for the current year. Should this solution not be possible, the Board were of opinion that pilgrims should be detained at Khana, kept there till their steamer is ready, then sent down to Calcutta, put in a depôt at Garden Reach or elsewhere for a day or night only, and shipped off. The object of stopping them at Khana would be to prevent the accumulation in Calcutta of a large number of pilgrims, some of whom come from places beyond India and whose presence would be a source of danger, if not from plague, certainly from cholera, which has equally to be reported to the International Board of Health. The Board thought that by sending the Inspector of Pilgrims and some of the brokers to Khana, the Upper India pilgrims could be separated from other passengers. It was ascertained that Bombay pilgrims are kept ten days in an observation camp at Nasik, and this, *plus* their detention at Khana, was, in the opinion of the Board, sufficient to render them free from infection.

The Eastern Bengal pilgrims, who are far removed from infected areas, might, the Board were of opinion, come straight to the depôt.

As there was some difficulty about a depôt, Mr. Warner having objected to give up the Trinidad one, which is very suitable to the purpose, the Board decided to ask Mr. Warner, Sir John Lambert, and Dr. Macleod to attend at the Board's meeting at 11 A.M. to-morrow, so that this question might be thoroughly discussed and settled.

(*b*) As to passengers to Natal, the Board only heard about the matter this morning, and they are not yet in possession of all the facts. They understood, however, that about 300 of such emigrants are proceedings as *quasi*-free emigrants to Natal, and that they will sail from Calcutta. The Board were of opinion that these emigrants should be treated as pilgrims, stopped at Khana, and brought down to Garden Reach or elsewhere just before their steamer sails.

After transacting other minor business, the Board adjourned till 11 A.M., 12th February 1897.

TWELFTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.M., dated Darjeeling, the 10th October 1896, at their twelfth meeting, held in Calcutta on Friday, 12th February 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	...	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	...	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	...	*Members.*
SURGEON-COLONEL B. FRANKLIN, C.I.E.	...	*Members.*
SURGEON-CAPTAIN H. J. DYSON	...	*Members.*
MR. W. BANKS GWYTHER	...	*Secretary.*

THE following gentlemen were present by special invitation:—

THE HON'BLE C. W. BOLTON, Chief Secretary.

SIR JOHN LAMBERT, K C.I.E., Commissioner of Police, Calcutta.

DR. MACLEOD, Protector of Emigrants.

MR. WARNER, Emigration Agent.

The Board met at 11 A.M. and the following subjects were discussed:—

I. The East Indian Railway Company's letter No. 1527, dated the 10th February 1897, recommending the medical examination of passengers at Mokameh, Bankipore, Dildarnagar, &c., was again brought up before the Board. After some discussion the Board adhered to the reply they sent to the Railway on the 11th February 1897, making Bankipore the station for passengers bound to Patna. The reasons for selecting Bankipore in preference to Dinapore or any other station were that Bankipore catches passengers coming from the Tirhut State Railway, and is also the junction for Gaya; that the medical staff is strong at Bankipore, as there are Assistant Surgeons at the Patna Medical School, and they might be expected to be able to do the work of inspection without extra men. At Dinapore there is no medical staff available for inspection, and it is further probable that the Military authorities would object to Dinapore being used as an inspection and segregation camp.

II. *Pilgrims.*—The Hon'ble Mr. Playfair's letter of the 11th February 1897, furnishing information with regard to the prospective pilgrim traffic from Calcutta, and a telegram, dated the 11th February 1897, from the Port Health Officer, Bombay, reporting that about 500 pilgrims now in Bombay will shortly come to Calcutta, were read.

After much discussion the Board agreed (the Hon'ble Mr. Bolton and Sir John Lambert concurring) that not only the 500 pilgrims now in Bombay, but all pilgrims and native passengers should be kept out of Calcutta and camped at Diamond Harbour until ready to sail,

when they would be put on board there. It was decided to wire to the Port Health Officer, Bombay, to arrange with the Commissioner of Police at that place and the Railway authorities to book all pilgrims direct from Nasik or Bombay, as the case may be, to Diamond Harbour, in charge of brokers, who would be responsible for their not leaving the train; and also that the Railway Police should be warned along the line and the Medical Board informed of the numbers of pilgrims leaving, their dates of departure, and the trains by which they start. It was also resolved to communicate with the East Indian and the Great Indian Peninsular Railways on the subject.

III. *Natal passengers.*—Copy of a letter, dated 11th February 1897, addressed to the Hon'ble Mr. Playfair on this subject, was read. As the Board had not sufficient information on the subject to come to any definite conclusion, they decided to endeavour, through their President, to obtain the necessary information from the Home Department of the Government of India.

IV. *Arrangements for Depôts.*—Mr. Warner still objected to giving up his depôt at Garden Reach, as it would be wanted for his own purposes. The Board, however, saw their way to making arrangements at Diamond Harbour for all pilgrims and for the Bombay people who are said to be going to Natal.

V. Lastly, it was resolved that the Agents for the various pilgrim steamers mentioned in the Hon'ble Mr. Playfair's letter, dated 11th February 1897, be invited to attend the next meeting of the Board, to be held at 2 P.M. on the 13th February 1897, in order to enable the Board to explain things to them and find out from them what number of pilgrims they expect.

THIRTEENTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, 10th October 1896, at their thirteenth meeting, held in Calcutta on Saturday 13th February 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	...	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	...	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	...	
SURGEON-COLONEL B. FRANKLIN, C.I.E.	...	
SURGEON-CAPTAIN H. J. DYSON	...	
MR. W. BANKS GWYTHER	...	*Secretary.*

THE following gentlemen were present by invitation:—

MR. C. E. SMYTH, representative of Messrs. Turner, Morrison & Co.
VISRAM IBRAHIM, ESQ.
ISSUP MUHAMMED SULIMAN, ESQ.
MIRZA MUHAMMED ALLY, ESQ.

I. The present difficulties in connection with the pilgrimage to Mecca were explained to the gentlemen invited, and enquiries were made of them as to the number of pilgrims who were likely to come to Calcutta.

II. A telegram, dated the 13th February 1897, from the Police Commissioner, Bombay, stating that only those pilgrims who state that they are determined to go on their pilgrimage are detained under observation at Nasik, while those who wish to return to their homes are allowed to do so, was considered. In view of the great danger which the above arrangements involved, the Board resolved to write to Government, urging strongly that not only pilgrims, but all persons leaving Bombay and Karachi or other infected areas should be detained ten days under observation, whatever statements they may make as to their intentions.

III.—It was also resolved to wire to all Local Governments and Administrations requesting them to warn all intending pilgrims from Calcutta to Mecca that they will not be allowed to enter Calcutta, but will be conveyed by train direct to Diamond Harbour, where they will be detained under observation until their steamers are ready to start.

Resolved—That a copy of the above telegram be sent to India General Steam Navigation and Rivers Steam Navigation Companies; Commissioner of Police, Calcutta; Inspector-General of Police, Lower Provinces; Agent, East Indian Railway; Agent, Bengal Central Railway; and the Manager, Eastern Bengal State Railway.

IV. The proposal of Dr. Simpson that he should go to Bombay to study the latest development of plague was next brought up. The Board were unanimously of opinion that it would be a great mistake for Dr. Simpson to leave his post at the present time.

FOURTEENTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, 10th October 1896, at their Fourteenth meeting, held in Calcutta on Thursday, 18th February 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	
SURGEON-COLONEL B. FRANKLIN, C.I.E.	
BRIGADE-SURGEON-LIEUTENANT-COLONEL D. D. CUNNINGHAM, C.I.E.	
SURGEON-LIEUTENANT-COLONEL G. BOMFORD	
SURGEON-CAPTAIN H. J. DYSON	
DR. KAILAS CHANDRA BOSE, RAI BAHADUR	
MR. W. BANKS GWYTHER	*Secretary.*

THE following gentlemen were also present by special invitation:—

J. P. HEWETT, ESQ., C.I.E., Secretary to the Government of India, Home Department.

SIR JOHN LAMBERT, K.C.I.E., Commissioner of Police.

MR. P. WAGSTAFF (representing the Agent, East Indian Railway).

MR. S. FINNEY, Manager, Eastern, Bengal State Railway.

CAPTAIN B. CREAGH, Port Officer, Calcutta.

MR. W. D. PRATT, Deputy Inspector-General of Police.

1. The following points raised in Government of India, Home Department, letter No. 503, dated 17th February 1897, in regard to the pilgrimage to Mecca, were discussed. Almost all these points were embodied in a note which the President of the Board sent round the previous day to the members:—

1. Taking over of Bengal pilgrims from Bombay.
2. Preventing intending pilgrims from going to Bombay and dissuading Muhammadans from going on pilgrimage this year.
3. Disinfection before sailing.
4. Food-supply in pilgrim ships.
5. Place for observation of Bengal pilgrims.

As regards (1), all who were present agreed that the Bengal pilgrims who are now at Bombay should be brought down to Arrah, a fairly quiet station near the borders of the province, from which place there will be no difficulty in arranging for their transfer to their homes. Railways will issue special tickets and instruct their officers that holders of these tickets will not be allowed to leave the train except at the station they are bound for.

As regards (2), it was decided to warn intending pilgrims of the inconvenience they will be obliged to submit to.

Regarding (3), Mr. Hewett said that the Government of India intended that disinfection should be carried out at the camp of observation.

As regards (4), no regulations were considered necessary, as pilgrims would have no opportunity of buying food.

As to (5), every one was against Khana, on the ground that it would not do to mix up pilgrims with plague suspects. On the whole, Chuadanga was considered to be the most suitable place. It was, however, thought advisable that Dr. Dyson should go to Chuadanga and consider the water-supply of the locality.

II. The Sanitary Commissioner's letter No. 479, dated 13th February 1897, was next brought before the Board, and, with reference to the remarks made by Dr. Dyson regarding the supply of food and water at Khana, it was resolved that the Magistrate of Burdwan should be asked to cause filtered water to be supplied from the Burdwan Municipal mains on the requisition of the Inspecting Officer at Khana, and to place the food-supply of the camp on a more satisfactory basis.

III. The Board understood from the Sanitary Commissioner that the progress of work at Khana had been greatly retarded for want of funds, and that the medical officers and lady doctors had to experience great inconvenience for want of accommodation at the inspecting platform. These matters were discussed with Mr. Wagstaff (who was present as the representative of the East Indian Railway), and it was finally resolved that the Agent, East Indian Railway, should be requested to take steps to prevent any stoppage of work and to place two carriages—one first and one second class—at the disposal of the Inspecting Officers.

V. Read a letter, dated the 1st March 1897, from the Hon'ble Mr. Playfair, and its enclosures, in which he enquired, on behalf of the steamer companies, whether, in view of the opinion given by Mr. Hankin that grain and flour do not permit of the existence of the bubonic microbe for more than about 5 to 6 days, the Board would withdraw their objection to the importation of wheat and flour, specially the latter, from Bombay. He also added that it was understood that Bombay millers would guarantee that the flour was made only from wheat imported direct from up-country.

Resolved—That the Hon'ble Mr. Playfair be informed that, in deference to Mr. Hankin's opinion and in view of the guarantee of the Bombay millers, the Board did not wish to press their objection to the importation of flour from Bombay.

EIGHTEENTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, the 10th October 1896, at their eighteenth meeting, held in Calcutta on Tuesday, the 6th April 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	*President.*
THE HON'BLE P. PLAYFAIR, C.I.E.	*Members.*
THE HON'BLE J. G. H. GLASS, C.I.E.	
SURGEON-COLONEL J. H. NEWMAN	
SURGEON-LIEUTENANT-COLONEL G. BOMFORD	
SURGEON-MAJOR H. J. DYSON	
RAI KAILASH CHANDRA BOSE BAHADUR, L.M.S.	
MR. W. BANKS GWYTHER	*Secretary.*

THE following subjects were brought up for the consideration of the Board and the decisions arrived at are noted against each:—

(1) *Examination of female passengers.*

It was proposed that 1st and 2nd class female passengers be examined in carriages, and 3rd and intermediate class female passengers who are *purdanishin* be examined with screens. The Hon'ble Messrs. Glass and Playfair and Drs. Newman and Dyson were for letting things alone, but the President and Dr. Bose were for a compromise to the effect that the inspection of intermediate and 3rd class female passengers be conducted on the platforms within screens, the examination in every case being conducted within the railway carriage.

(2) (*a*) The disinfection of baggages of passengers from infected areas.

The Board were of opinion that the disinfection of passengers' baggages should be confined to persons suspected at Khana, and that no attempt should be made in that direction in respect of persons arriving by sea.

(*b*) The disinfection of certain classes of merchandise from infected areas.

As to merchandise coming by sea, the Board thought that the notification prohibiting importation of rags, used apparel, bedding, waste paper and used gunny-bags, is sufficient for all practical purposes. The statistics obtained by the Board of merchandise borne by rail showed that it is not worth while to interfere in the matter.

(3) The adoption of North-Western Provinces, Regulations (*a*) of the 23rd March regarding goods consigned from the infected areas, and (*b*) of the 26th March 1897 for the prevention of plague.

The Board went over the Regulations and agreed to circulate drafts for criticism by the respective members.

(4) Messrs. Kilburn & Co.'s complaint that strict examination of passengers from Rampur Boalia on board their steamers, at Damukdia, was driving them to travel by country boats and thereby to evade inspection.

It was decided to ask the Sanitary Commissioner to instruct the Inspecting Officer at Damukdia not to examine any passengers by steamer who hold tickets from Rampur Boalia or from any other stations between that place and Damukdia, as the Board did not consider the examination of such passengers to be necessary, since they came from places on the left bank of the Ganges which have no communication with any infected area.

(5) Passengers avoiding inspection by travelling with tickets which do not indicate their starting station.

The Medical Board on a previous occasion discussed the matter and came to the conclusion that no action would prove effective, except what might be done by the Railways. Under some recent regulations passengers are required to complete the journey for which they have taken tickets, and those coming from infected areas are required to furnish the Police with particulars in regard to their movements and destination. The Board did not consider any further action necessary.

(6) Proposal of the Indian Jute Manufactures Association to separate mill areas and their immediate contiguous areas from the municipalities of which they form part, and to form each such area into a separate and distinct municipality.

(7) Punishment of absconders from quarantine camps.

(8) Certificate to passengers detained for observation to cover their date-expired tickets.

(9) Insanitary condition of the hackney carriage stand north of Government House.

(10) Insanitary condition of the hackney carriage stand at the Dhurrumtolla corner.

It was decided to lay the papers before the Hon'ble Mr. Playfair, C.I.E., for favour of his remarks before final consideration by the Board.

The Sanitary Commissioner suggested that the Judicial authorities be moved to take a more serious view of such offences, but the Board decided that no steps need be taken in the matter.

It was decided to send the form of certificate supplied by the East Indian Railway to the Sanitary Commissioner for issue to the Inspecting Officer at Khana with necessary instructions.

It was decided to ask the Corporation to report the nature of the works undertaken for the improvement of this stand.

Resolved that the Chairman be asked to move the Commissioners to sanction the improvement of the stand as suggested by the Superintending Engineer of the Central Circle.

NINETEENTH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937T.—M., dated Darjeeling, the 10th October 1896, at their nineteenth meeting, held in Calcutta on Tuesday, the 10th August 1897.

PRESENT:

THE HON'BLE J. G. H. GLASS, C.I.E.	*Offg. President.*
SURGEON-COLONEL J. H. NEWMAN	*Members.*
SURGEON-LIEUTENANT-COLONEL G. BOMFORD	
SURGEON-MAJOR H. J. DYSON	
THE HON'BLE M. C. TURNER	
ALLAN ARTHUR, ESQ.	
DR. MAHENDRA LAL SIRCAR, C.I.E.	
RAI KAILAS CHANDRA BOSE BAHADUR	
MR. W. BANKS GWYTHER	*Secretary.*

1. CONSIDERED a reference made by the Government of Bengal, Municipal Department, regarding the form of rule 31 of draft Plague Notification No. 8.

Rule 31 refers to segregation, that is, the separation of persons affected by plague from others not so affected, and the object of the rule is to permit of home segregation or the separation of plague patients from contact with others by confining them and their families and attendants to the precincts of their own houses, this permission being subject to the conditions (1) that in the opinion of the Health Officer the residence of the sick person is so situated and possesses such accommodation that the sick person can be properly isolated therein or in the immediate vicinity thereof; (2) that the family of the sick person deposit a sum sufficient to meet the probable expenses of such isolation, including the cost of watch and ward of the premises, and complete disinfection of the premises and of the clothing and bedding of all inmates; (3) that arrangements be made, to the satisfaction of the Health Officer, for medical attendance and for the supply of food to the household, none of whom be allowed to leave the premises until the house is declared free of infection.

The members of the Board after considering the matter were unanimously of opinion that from the public health point of view home segregation is an altogether undersirable method of combating the plague, and the conditions which must necessarily be laid down in connection with it could not, except with great difficulty, if at all, be enforced. They were also convinced that it is absolutely essential that a house in which plague has occurred should be vacated as soon as possible. Looking at the subject in its social and political aspects, the Board believed that there was nothing serious to apprehend as regards the attitude of the population towards regulations framed on the basis of this objection to the system of home segregation, provided the leading representatives of the several communities were asked and agreed to co-operate with the Medical authorities in devising means for carrying into effect such rules as require the removal of plague patients from their infected houses.

As regards measures that can be taken to effect the removal of a plague patient from his or her home, and to place him or her under conditions favourable to his or her own health and that of the public, the Board were of opinion that broadly the measures adopted in Bombay with results so satisfactory both to the Plague authorities and to the people themselves should be followed if occasion arises in Calcutta. Rule 31 (3) in the draft Notification No. 8 indicates the alternatives which are available to those whose removal from their own homes is found necessary.

The Board also considered the question as to whether the draft rule 31 (1) should be allowed to stand on the understanding that full discretion be left with the Health Officer to refuse any or all proposals for home segregation; but their views were so decisive in regard

to the futility of this method of separating plague cases, and they further were so clearly of opinion that the discretion is too large a power to place in the hands of a Health Officer, that they were unable to favour the alternative.

II. Letter No. 3851, dated the 24th July 1897, from the Government of Bengal, Municipal Department, and its enclosures, regarding the system of disinfection to be adopted for the port and town of Calcutta, as well as Howrah and other riparian municipalities, as suggested by Dr. Lowson, Joint Plague Commissioner, viz., by having a barge fitted up with a steam disinfector, next came up for discussion. The disposition of the Board was to take the view held by Dr. Forsyth that Dr. Lowson's plan would be both inconvenient and expensive, and, as the present system of disinfection was working very well and effectively, there was no necessity for any change.

III. No. 13, Dum-Dum Road, was selected by the Corporation of Calcutta for the site of an isolation hospital; but the residents objected to the survey of the house by the Corporation except by the authority of the Board (Corporation's letter No. 2483, dated the 28th July 1897). After discussion it was decided that the President and the Sanitary Commissioner should visit the house in question before passing the necessary orders.

IV. With regard to a proposal made by the Inspector-General of Civil Hospitals, Bengal, that the three "Thresh" pattern disinfectors imported by Messrs. Martin & Co. should be purchased by Government and deposited in the Medical College, Presidency General, and Campbell Hospitals for use if required, but so as to be ready in case of emergency, it was decided to inform Government in reply to their reference, that the Board approve of the recommendations of the Inspector-General of Civil Hospitals. It was further suggested by the Board that if the authorities of any of these hospitals have no accommodation for a disinfector, it might be placed in the charge of the Public Works Department.

V. Dr. Bharat Chandra Banerjee's letter, dated 4th August 1897, in regard to his book in Bengali called "Susrusha Pranali," was next considered, and the Board decided that it was outside their province to comply with his request, viz, to cause a number of copies of his book to be distributed with the weight of the Board's authority, and also to recommend its use as a text-book.

VI. The Board confirmed the action of the Sanitary Commissioner in ordering the purchase of certain articles of furniture and *taktaposhes* required for the plague camp at Khana.

TWENTIETH MEETING.

Proceedings of the Medical Board appointed in Government Resolution No. 937 T.—M., dated Darjeeling, the 10th October 1896, at their twentieth meeting, held in Calcutta on Monday, the 30th August 1897.

PRESENT:

THE HON'BLE J. G. H. GLASS, C.I.E.	...	*Offg. President.*
SURGEON COLONEL J. H. NEWMAN ...	...	*Members.*
SURGEON LIEUTENANT-COLONEL G. BOMFORD	...	
SURGEON-MAJOR H. J. DYSON ...	...	
THE HON'BLE M. C. TURNER ...	...	
DR. MAHENDRA LAL SIRKAR, C.I.E. ...	...	
RAI KAILASH CHANDRA BOSE BAHADUR	...	
MR. W. BANKS GWYTHER ...	...	*Secretary.*

READ a letter from the Sanitary Commissioner, Bengal, No. 2482, dated the 14th August 1897, recommending an increase in the period of detention of "suspects" at the quarantine camps at Khana and Katihar from 24 or 48 hours to 5 days.

Resolved—That it is not desirable that discretionary powers which the Inspecting Officers have under clause 4 of Plague Notification No. 2, dated the 10th February 1897, should be exercised by the Medical Board. The question of increasing the period of segregation for "suspects" up to the limit of 7 days specified in the notification referred to above must, the Board thought, be left to the Inspecting Officers to settle in consultation with the Sanitary Commissioner and Medical Department, if necessary.

APPENDIX III.

SUSPECTED CASES OF PLAGUE IN CALCUTTA AND ITS NEIGHBOURHOOD IN 1896.

APPENDIX III-A.

Note on the cases reported as Plague in Calcutta.

THE following eleven cases have been reported to the Medical Board as cases of bubonic plague in Calcutta, besides certain cases in the Fort, which, on enquiry, proved to be ordinary non-venereal buboes:—

* One case in Howrah.
* One case in Chatawallah Lane.
* Two cases in Manicktola Hospital.
Two cases in the Presidency General Hospital.
One case in Garden Reach.
* One case in Raja Raj Bullub Street.
One case in Wooltadanga.
* One case in Armenian Street.
One case in Warris Bagan Lane.

In the cases marked with an asterisk, the plague bacillus is said to have been found in the blood of the persons attacked. Three others were found to be cases of simple enlarged glands, fever and bronchitis and intestinal obstruction respectively. The result of the examination of the blood of the two cases in the Presidency General Hospital is not known to us. As a full history of all these eleven cases is contained in the appendix to this report, it is not necessary to recapitulate them here, and a summary of the conclusions drawn from these will therefore be sufficient in this place.

The bacillus is also said to have been identified in the case in Raja Raj Bullub Street which terminated fatally. This case was first reported by a homœopathic practitioner to the Health Officer of Calcutta by postcard on the evening of the 2nd November. It was seen by Drs. Cobb and Simpson on the 3rd at 5-30 P.M., and the man died in their presence at 6-30 the same evening. They reported it "as a fatal case of true plague." The Board of Health did not hear of this case till the following day, after the body had been disposed of, and then only from private information. An interval of nearly 20 hours occurred between the time the case was first seen by the homœopathic practitioner and the time it was inspected by Drs. Cobb and Simpson. It is to be regretted that Drs. Cobb and Simpson did not call in one of the medical members of the Board, who would have been only too willing to go and see "a true case of plague." The omission is the more unfortunate, because doubt had arisen in the public mind regarding the diagnosis of the previous cases. Drs. Dyson and Robson-Scott, however, as soon as they heard of the case, proceeded to the spot and made minute enquiries concerning it, with the result that it was clear that other reasons existed for the enlargement of the glands in the groin, which was reported to be one of the prominent features of the case.

The most noticeable point in the suspicious cases that have occurred is the fact that all the patients in whose blood the plague germ is said to have been found recovered, with the single exception of the case in Raja Raj Bullub Street, and in this case, as already stated, the symptoms noticed can reasonably be ascribed to other causes. Another remarkable fact is that none of these six sporadic suspicious cases produced any infection either in the neighbourhood or even amongst the people who attended the sick.

Looking only to the clinical symptoms set forth in the appendix to this report, we have no hesitation in expressing our emphatic opinion that none of these cases, including the fatal case of Bipin Behari Dutt, can properly be described as cases of bubonic plague. It may be inferred, however, from the reports which have come before us, that the diagnosis made by the Health Officer and Dr. Cobb is based not so much upon the symptoms of the patients as upon the supposed presence in their blood of a microscopic organism stated to be "the plague bacillus." We propose, therefore, to examine the evidence bearing on this point, and to state how far the conclusions arrived at by Drs. Cobb and Simpson are borne out by the independent investigations carried on by our colleague, Dr. Cunningham.

Dr. Cunningham has received from M. Haffkine a type-culture and several microscopic preparations of the plague bacillus as occurring in Bombay. These agree in their characters with those described as characteristic of the plague bacillus as found in China, and there can be no reasonable doubt that the Bombay bacillus is the same as that which is regarded by M. Yersin and Professor Ketasato as the specific cause of plague.

Dr. Cunningham has also personally obtained 20 microscopic preparations and 15 cultures of blood from seven distinct cases of supposed plague, six of which occurred among men in the Shropshire Regiment. The microscopic preparations show nothing, except that some of the subjects suffered from anæmia; while the cultures have without exception remained absolutely sterile.

A series of cultures and preparations of local origin was received by Dr. Cunningham from Drs. Simpson and Cobb. None of these exhibit the characters of the standard type. In one instance only does the growth in the form of colonies present some similarity to that of the type specimen; but in this case the microscopic characters do not resemble those of the Bombay bacillus. In another case the culture yielded an absolutely pure growth of a large *staphylococcus*, which is of common occurrence in the air; while the corresponding blood preparation showed evidence of contamination from other sources in the presence of a certain number of slender bacilli. In a third culture there was a pure growth of a form of *schizomycete* or fungus, of which neither the colonies nor their constituent elements bore the remotest resemblance to the plague bacillus. A fourth culture prepared from the blood of Bipin Behari Dutt contained large bacilli, probably of a putrefactive character, along with minute *cocci* and *diplococci*; but in the microscopic preparation of the blood only the large bacilli could be recognised. The remaining cultivations of local origin are pure cultivations of *cocci* and *diplococci* not agreeing in character with the type specimen, and not distinguishable from forms which are liable to occur in and on almost any organic medium as the result of contamination. As the phenomena of three out of the four cases expressly referred to above furnish conclusive evidence that actual contamination occurred, there is no certain proof that in the remaining cases the minute organisms discovered were really derived from the blood.

In the case of Bipin Behari Dutt, whose clinical symptoms we have already discussed, a specimen of blood and some blood-cultures were sent to Dr. Cunningham, together with portions of a rat into which 2 cubic centimetres of a culture of blood had been injected, causing its death after thirty-one hours. The specimen of blood and the cultures showed, as has been mentioned above, unequivocal evidence of contamination by the presence of large bacilli, probably of a putrefactive character, which must have gained access to the preparation from outside.

This being so, it is clear that the smaller *cocci* and *diplococci*, which were also found, may equally have been the result of contamination. Nor does the death of the rat after inoculation afford any grounds for inferring the specific character of the germs contained in the culture, with which the animal was inoculated, for the bulk of actively decomposing fluid injected into the animal was relatively equivalent to over a pint in the case of an adult human being, and was quite sufficient to cause death by mere blood poisoning. Moreover, had the enormous number of microscopic organisms introduced into the rat possessed the specific character attributed to them, the blood and tissues ought after death to have absolutely swarmed with the organisms, whereas in fact only a very scanty sprinkling of minute *cocci* and *diplococci* could be found in the specimens submitted to Dr. Cunningham.

Looking to the evidence as a whole, we have no hesitation in expressing our opinion that there is no evidence that any case of true bubonic plague has yet occurred in Calcutta, and that the cases which have been reported to us as plague were so described on the strength of an opinion as to the origin and character of certain microscopic organisms, which has not been confirmed by the results of an independent inquiry conducted by an expert of long experience in bacteriological research.

H. H. RISLEY,
Secretary to Government, Municipal and Medical Departments. — *President.*

J. G. H. GLASS,
Secretary to Govt., P. W. Dept.

G. C. ROSS,
Inspector-General of Civil Hospitals.

P. PLAYFAIR,
Sheriff of Calcutta.

D. D. CUNNINGHAM,
Professor of Physiology, Medical College.

H. J. DYSON,
Sanitary Commissioner, Bengal.

Members.

REPORTS ON SUSPECTED CASES OF PLAGUE.

Case No. I.—Reported Case of Plague at Howrah.

A telegram was received by Mr. Risley on the 9th October, stating that a case of Pestis Ambulans had occurred in Howrah.

Telegram, dated 10th October 1896.

From—Darjeeling,	To—Calcutta.
From—Civil Hospitals, Bengal,	To—Dr. Sanders.

Please keep me regularly informed by wire regarding plague; and instruct all Medical Officers at Presidency to keep you informed.—

Drs. Ross and Dyson left Darjeeling on Sunday, the 11th October, for Calcutta.

J. Cotta, a Eurasian, aged $16\frac{9}{12}$ years, is a resident of Bombay, living at Byculla at a distance of nearly 3 miles from Mandvi. On the 13th September he exposed himself to venereal infection; on the 17th he noticed local sores, and on the 19th that the glands of both groins were a little enlarged and slightly tender. He left Bombay on the 25th in company with his sister and her children, arriving in Howrah on the 26th. He lived in a small house in Punchanuntollah in company with his sister and children.

On the 2nd October he went to the Howrah General Hospital under the assumed name of Nadoo, and was treated by Mr. Milchem, the apothecary, who diagnosed soft sores and prescribed "blackwash." At that time he had tender glands and slight fever. He returned on the 4th. The sores were better, but not quite healed; the buboes were painted with iodine; he said his fever had gone. On the 7th he again went to hospital, and was advised to become an in-patient for the further treatment of the buboes. He was directed to become a paying in-patient. He then went to the Medical College. About this time suspicion seems to have been roused about him.

S. B. Ghosal, Native Doctor to the East Indian Railway, who is at the Howrah General Hospital, states that on the 8th he was ordered by Dr. Tomes to go to Punchanuntollah to see Cotta at his house, and found him suffering from fever, with a temperature of 102°F., and swollen inguinal glands. He was visited the same evening by Drs. Tomes and Simpson; the latter aspirated blood from the finger and from the buboes for bacteriological examination. On the following day Drs. Cobb, Tomes, and Simpson signed a certificate, stating that plague bacilli had been found in the blood of Cotta.

On the 11th, at the request of Dr. Ross, Inspector-General, Civil Hospitals, Cotta was examined by Dr. Sanders, who sent a telegram to Dr. Ross as follows:—

"Have seen Cotta; a typical case of syphilitic buboes; no fever; no cause for alarm."

On the 11th he was removed into the building provided by the Municipality for plague cases, his sister and a small boy accompanying him.

On the 12th he was examined by Drs. Ross and Dyson, who had just arrived from Darjeeling. Dr. Sanders also went with them.

They found him in the infectious hospital. It is situated on the road to Andul, and is a small cutcha-pucka house of two rooms with a square walled court-yard.

Both he and his sister were complaining bitterly of having been removed there. The place was full of flies, and the amount of ventilation scanty. On examination he was found to be in full possession of his senses—no headache, tongue clean, appetite good. He had inflamed glands in both groins, and stated that he had been put to considerable pain by being conveyed to the building in a gharry. His temperature was 102°F. This can easily be accounted for by the commencing suppuration in the buboes; the soft sores had completely healed. He had not received any clothes or food from Bombay since his arrival in Howrah. A consultation was held at once, and Dr. Sanders expressed his willingness to take the case into the Mayo Hospital for further treatment of the buboes. It was decided, however, to take him back at once to the infectious ward of the General Hospital at Howrah. This place was selected to avoid causing panic among the patients in the main body of the hospital.

He was visited again on the morning of the 13th by Drs. Ross, Sanders, Dyson, Vaughan, Tomes, and Mr. Maguire. He was very cheerful, tongue clean, eyes clear, no headache, pain less in the buboes. He expressed great satisfaction at the change of residence, and said he was all right. There were in the same room with him, his sister, a boy, and a female friend. The bubo on the left side showed slight deep fluctuation. It has been decided that when this is opened, some of the pus will be sent to Dr. Simpson for examination.

Dr. Ross deputed Dr. Leahy (who has had personal experience of plague in Bagdad) the same day to visit Cotta and report on his condition. He visited him at once and wrote as follows:—

"In accordance with your orders, I visited and made a careful examination of the man Cotta this afternoon at the Howrah Hospital. His condition bears no resemblance

clinically to the cases of plague I saw in Bagdad. Of the two inguinal buboes, the left one is apparently undergoing suppurative changes, and to this I attributed his temperature 101° this afternoon. I have suggested the desirability of inoculating a spot on the abdominal wall with some of the pus from the bubo, when he opens it, with a view to finding out whether it will produce a soft chancre at the point of inoculation. We carefully examined Cotta's urine, with the following result:—Clear, amber coloured, acid in reaction, specific gravity 1,020, phosphates present, *no albumen*.

On the same day Drs. Ross, Sanders, Dyson, Tomes and Vaughan examined the house in which Cotta had lived previous to his removal to hospital. It is a small cutcha-pucka house, with cramped rooms, involving constant contact in its inhabitants. It had not been fumigated or disinfected or white-washed up to that date. Cotta's sister and the other people living in it evinced no fear of infection from living in it, and ridiculed the idea. In the same mohulla (Punchanuntollah) a case of plague had been reported that morning, and was immediately inspected by the doctors named above.

The patient was a Mussalman child, a little more than one year old. It had an enlarged gland in the right armpit, and a smaller one in the groin on the same side. Its temperature was 100°. It was said to have been ill for five days. The child did not appear to be suffering any great physical inconvenience, and its eyes were clear and bright, and the expression of the face cheerful. A local practitioner, who was standing by, stated "that it was by no means uncommon for people to get enlarged glands and fever in Howrah at the end of the rainy season."

Remarks.—Reviewing the case of Cotta, the only reason for supposing that he is suffering from plague (*Pestis ambulans*?) is the fact that plague bacilli have been found in his blood. I am not skilled bacteriologist enough to decide whether they are the real bacilli or not, and would like the opinion of some other bacteriological expert, say Dr. Cunningham. On the other hand, we have a clear history of venereal infection with the enlargement and final suppuration which is so commonly a sequel. He has never suffered from any other symptoms resembling plague. His appetite has been good. His tongue is clean after nearly a month's illness; he has never suffered from frontal headache, delirium, high fever, hæmorrhage, or epistaxis, injection of the conjunctivæ; the enlarged glands have never caused severe pain; in fact, he has had none of the classical symptoms of plague. I am aware that there is a very mild form of plague called the "ambulatory form," in which the symptoms are of the slightest. This form of disease is generally held to be non-infectious.

With regard to the native practitioner's statement, that at certain times of the year people in Bengal suffer from enlarged glands, the remarks of Surgeon-Colonel May, A.M.S., in his Annual Return for 1895, possess great interest.

He says:—"There were 43 admissions for disease of the lymphatic system, of which 37 were for inflamed lymph glands of the groin. It would seem that there must be some climatic (malarial?) influence at work in the production of this disease, as it is of such frequent occurrence, and no other cause is assignable; many of them run a long course, and have to be scraped or removed before recovery takes place."

The above statement indicates that extreme caution should be exercised before the mere existence of enlargement of the inguinal glands should be regarded as pathognomic of plague.

H. J. DYSON, F.R.C.S.,
Sanitary Commissioner.

Telegram, dated 11th October 1896.

From—Howrah,	To—Darjeeling.
From—SANDERS,	To—Hospitals, Bengal.

HAVE seen Cotta—a typical case, syphilitic buboes; no fever; no cause for alarm.

Letter From—SURGEON-LIEUTENANT-COLONEL SANDERS.

36, CHOWRINGHI,
The 11th October 1896.

DEAR DR. ROSS,

I got your telegram this morning at 10 A.M., and at once went to Howrah. I saw and carefully examined J. Cotta.

History.—He lived with his parents in the Byculla quarter of Bombay, said to be three miles from Mandvi: he never went to Mandvi.

He left for Calcutta on September 23rd, and travelled in the same carriage with his sister and her children, arriving at Calcutta on the 26th. The sister and the children have remained perfectly well. On October 2nd he went as an out-door patient, giving the assumed name of Nadoo, to the General Hospital at Howrah.

The Assistant Surgeon, Mr. Milchem, found that he had a sore on his penis and buboes. He gave him blackwash for the sore, and I forget what for the buboes (*Cotta's statement*).

On October 7th he applied for admission to the Hospital as an in-door patient, and said his sister would pay for his keep. He was told to get a letter from his sister, and went away, not returning to the Hospital. On October 8th a police report was sent that there was a suspicious case of fever with buboes. This Mr. Cotta was then examined by Dr. Tomes first, and then by Dr. Tomes, Dr. Cobb and Dr. Simpson; and they pronounced the disease to be bubonic plague.

Present condition: Sunday, October 11th.—Found dressed and sitting in a chair; no fever; no symptoms of having been ill. Temperature normal. Pulse quiet and regular.

Tongue clean; appetite good. On each side of the abdomen above Poupart's *ligament* a large bubo on either side, larger on the left than the right; no sign of suppuration, and but very little pain on pressure. Admits having been with girls in Bombay, and to have had a sore first followed by these buboes.

On the inner side of the arms and on the front of the forearm, on the right side, a very suspicious rose rash, faint when seen by me, but stated by his sister to be much more marked when he gets warm. It looks very like a commencement of the rash secondary syphilis.

I am sure the case is nothing more than an ordinary bubo, following a chancre on the penis.

I have never seen a case of plague, but I am sure I cannot be mistaken in an ordinary case of syphilitic bubo.

If any case of plague is reported, I will personally see it, and wire you the result.

P.S.—I am willing to take all responsibility for this report, and to treat the man in the Mayo Hospital.

Letter from—SURGEON-LIEUTENANT-COLONEL SANDERS.

Dated 11th October 1896, 11-30 a.m.

J. COTTA lived with his parents in the Byculla quarter of Bombay, said to be three miles from Mandvi. He left for Calcutta on September 23rd, and travelled in the same carriage with his sister and her children, arriving at Calcutta on the 26th September. On 2nd October he went as an out-door patient, giving the assumed name of Nadoo, to the General Hospital at Howrah. The Assistant Surgeon, Mr. Milchem, found that he had a sore on his penis and buboes. He gave him blackwash for the sore, and I forget what for the buboes. On October 7th he applied for admission to the Hospital as an in-door patient, and said that his sister would pay for his keep. He was told to get a letter from his sister, and went away and did not return to the Hospital.

On October 8th, a police report was sent that there was a suspicious case of fever with buboes. This Mr. Cotta was then examined first by Dr. Tomes and afterwards by him in company with Drs. Cobbs and Simpson, and they pronounced the disease to be bubonic plague.

Dated Calcutta, the 15th October 1896.

Demi-official from—SURGEON-MAJOR R. COBB, Offg. Surgeon Supdt., Presidency General Hospital.

To—The Inspector-General of Civil Hospitals.

THE first case I saw was Cotta. Dr. Simpson and I examined the blood and fouud characteristic diplobacteria, similar to those described in works on Bacteriology and exactly like those in Dr. Simpson's possession from Bombay.

They were also found in the serum drawn from the gland.

2. Similar bacteria were found in the blood in the case of Grace Hodges, who had glandular enlargements with fever.

3. Also in the case of the boy Heman Shaw.

P. S.—Dr. Simpson had the notes, so I was unable to reply to yours at once.

Dated Howrah, the 12th October 1896.

From—SURGEON-MAJOR A. TOMES, Offg. Civil Surgeon, Howrah,

To—The Magistrate of Howrah.

WITH reference to your letter of yesterday on the subject of Mr. Cotta's illness and Dr. Sanders' opinions, I am still strongly of opinion that the case is one of pestis ambulans, the mild form of plague.

Dr. Cobb, Dr. Simpson and myself thoroughly examined the young man, having specially in view at the time any possibility of syphilis, and after careful consideration, came to the conclusion that the case was not one of syphilis.

I may mention that at the commencement of plague medical men have at times mistaken the glandular swelling in the groin for syphilitic buboes, and in this case Dr. Sanders appear, to have fallen into that error.

I feel it is my duty to warn you that this case is not syphilis, but plague, and that if the patient had not been isolated, he would be a danger to the community.*

* NOTE—The Board did not call this a case of syphilis, but called it a case of veneral infection.

Dated Calcutta, the 12th October 1896.

Memo. by—SURGEON-MAJOR A. TOMES, Civil Surgeon, Howrah.

COPY forwarded to the Sanitary Commissioner, Bengal, for information.

Telegram, dated Calcutta, the 15th October 1896.

From—The Inspector-General of Civil Hospitals, Bengal,
To—His Honour the Lieutenant-Governor.

WE have examined four reported plague cases. In our opinion, Howrah case is venereal bubo, one child, Howrah, abscess in armpit. In Maniktola two cases, ordinary fever. No case has any clinical appearance of plague. Letter follows.

No. 999, dated Howrah, the 15th October 1896.

From—SURGEON-MAJOR J. H. T. WALSH, Offg. Civil Surgeon, Howrah, nd Secretary of the Howrah General Hospital,
To—The Inspector-General of Civil Hospitals, Bengal.

I HAVE the honour to report that there is no fresh case resembling Bubonic Plague in Howrah, and all necessary precautions are being taken.

No. 1004, dated Howrah, the 16th October 1896.

From—SURGEON-MAJOR J. H T. WALSH, Officiating Civil Surgeon, Howrah,
To—The Inspector-General of Civil Hospitals, Bengal.

I HAVE the honour to report that there is no fresh case resembling Bubonic Plague in Howrah, and all necessary precautions are being taken.

No. 1005, dated Howrah, the 16th October 1896.

From—SURGEON-MAJOR J. H. T. WALSH, Officiating Civil Surgeon, Howrah,
To—The Inspector-General of Civil Hospitals, Bengal.

SINCE my arrival here on Tuesday, I have done my best to become acquainted with the history and symptoms of the case of Mr. Cotta. He arrived in Howrah on the 26th September. On the 28th September he suffered from "fever," and then attention was called to the fact that he was also suffering from large buboes in both groins. There is a history of unclean coition and the appearance of some small sores on the prepuce about the 16th September. Mr. Cotta left Bombay on the 23rd September, and at that time the glands in the groin were somewhat enlarged. In the same railway carriage there travelled his sister and other persons. These persons have shown no signs of illness, nor is there any evidence that any of them had been exposed to the danger of plague contagion in Bombay. A boy of about ten years of age has been in close attendance on Mr. Cotta both in the plague hospital and in the isolation ward of the Howrah General Hospital. This boy is in excellent health. I cannot here enter into details, but I have very good reasons for considering that the case is not one of *syphilis*. So far, and in the absence of other evidence, I should at once accept these buboes as the result of infection from *venereal sores and no* question of the "bubonic plague" would exist. The Health Officer of Calcutta examined the patient's blood, and in it he found a variety of diploccacus resembling, though perhaps not identical with, the micro-organisms found in the cases of plague in Bombay. I have been able, through the courtesy of Dr. Simpson, to examine a number of slides, including specimens from Bombay. I am also acquainted with the drawings made of the bacillus found by Yersin in cases in Hong-Kong. Although, from a clinical point of view, I am inclined to believe that no case of true virulent bubonic plague has as yet appeared in Howrah, I think that in Mr. Cotta's case further independent bacteriological researches should be made. Mr. Cotta's case may be, as I have seen stated, a mild case of "pestis ambulans," but whether identical with the plague, as I understand that disease, has yet to be proved. The ways of the bacteriologist are full of difficulties, and we may be dealing after all with some new form of disease.* One point is, I think, clear, that there is no occasion for any panic, and that any attempt to make the people over-anxious is to be deprecated. At the same time, so long as the plague continues in Bombay, the same care should be taken to detect and prevent it in Calcutta. It is better even to err on the side of over-carefulness. Mr. Cotta is doing well, the buboes will in course of time suppurate, and the final treatment will be surgical.

* Mr. Cotta's case in some of its aspects resembles mild cases reported from Yunnan,

J. H. W.

No. 1010, dated Howrah, the 17th October 1896.

From—SURGEON-MAJOR J. H. T. WALSH, Offg. Civil Surgeon, Howrah, and Secretary of the Howrah General Hospital,
To—The Inspector-General of Civil Hospitals, Bengal.

I HAVE the honour to report that there is no fresh case resembling Bubonic Plague in Howrah, and all necessary precautions are being taken. Mr. Cotta is doing well.

No. 1013, dated Howrah, the 18th October 1896.

From—Surgeon-Major J. H. T. Walsh, Officiating Civil Surgeon, Howrah,
To—The Inspector-General of Civil Hospitals, Bengal.

I have the honour to report that there is no fresh case resembling "bubonic plague" in Howrah, and all necessary precautions are being taken. Mr. Cotta is doing well. This morning it was reported to me that a syce in the employ of a European gentleman in Howrah was suffering from plague. I visited the case at once, and found the man suffering from gonorrhœa with orchitis.

No. 1023, dated Howrah, the 20th October 1896.

From—Surgeon-Major J. H. T. Walsh, Officiating Civil Surgeon, Howrah,
To—The Inspector-General of Civil Hospitals, Bengal.

I have the honour to report that there is no fresh case resembling "bubonic plague" in Howrah, and all necessary precautions are being taken. Mr. Cotta is doing well. Specimens of blood were taken this morning for examination by Brigade-Surgeon-Lieutenant-Colonel D. D. Cunningham.

19th.—Have again inspected all cases. All doing well, except Heman Shah; weak, but no fever or bubo.

20th.—Cotta was put under chloroform, and the left bubo was incised, and four cultivations, and two slide preparations of his blood were taken.

No. 1027, dated Howrah, the 21st October 1896.

From—Surgeon-Major J. H. Tull Walsh, Offg. Civil Surgeon, Howrah,
To—The Inspector-General of Civil Hospitals, Bengal.

I have the honour to report that there is no fresh case resembling "bubonic plague" in Howrah, and all necessary precautions are being taken. Mr. Cotta is doing well. Kindly let me know if he may be removed from the isolation ward.

No. 1030, dated Howrah, the 22nd October 1896.

From—Surgeon-Major J. H. T. Walsh, Offg. Civil Surgeon, Howrah, and Secretary of the Howrah General Hospital,
To—The Inspector-General of Civil Hospitals, Bengal.

I have the honour to report that there is no fresh case resembling "bubonic plague" in Howrah, and all necessary precautions are being taken. Mr. Cotta is doing well.

Dated Calcutta, the 23rd October 1896.

From—Surgeon-Captain H. J. Dyson, F.R.C.S., Sanitary Commissioner for Bengal, Acting Secretary to the Medical Board,
To—The Civil Surgeon of Howrah.

With reference to your letter No. 1027, dated the 21st instant, asking for instructions as to whether Mr. Cotta, who is said to be doing well, may be removed from the isolation ward, I have the honour to say that in a matter of this kind you should use your own discretion.

No. 1040, dated Howrah, the 24th October 1896.

From—Surgeon-Major J. H. Tull Walsh, Offg. Civil Surgeon, Howrah,
To—The Inspector-General of Civil Hospitals, Bengal.

I have the honour to report that there is no fresh case resembling "bubonic plague" in Howrah, and all necessary precautions are being taken. After a careful study of the history of Mr. Cotta's case, I have decided that it was not a case of "bubonic plague." I have removed him from the isolation ward, and his name will not in future appear in these reports. With your permission these reports will cease until a suspicious case does occur.

Case No. II.—Reported case of Plague at Chatawalah Gullee.

Reported cases of plague which have not been seen.—It was reported that the daughter of an officer in the Preventive Service was suffering from plague, and that bacilli were found in her blood. The parents declined to allow her to be sent to the Isolation Hospital. The following letter from Dr. Panioty throws some light on the case. He writes to the Secretary of the Mayo Hospital as follows:—

"Sir,—With reference to your letter No. 81, dated 5th October 1896, requesting me to inform the Surgeon-Superintendent of any suspicious case, I have the honour to submit for his information the following facts, as the newspaper reports are not correct, regarding

the girl Gertie Hodges of Chatawallah Gullee. I have seen Dr. Ferris about the case, and he informs me that when he saw the child on Saturday morning, the 10th instant, there was no fear, and that the child was apparently in good health as anybody. He did not pronounce the case to be one of *mumps*, and he told the mother that the child did not want any treatment, as the mother informed him that the swelling had subsided a good deal, and that she painted the neck with belladonna, as the iodine with which she had painted the neck caused the child some pain. Exactly the same symptoms were noticed here. When the child was brought here on the 9th October last, there was no fever, the child was in good health, only that the submaxillary and cervical glands were somewhat enlarged. Belladonna was painted and some medicine given, and the child has never been brought here any more, although the papers say she was brought here on Sunday morning. I examined the child and beyond symptoms noted, there were signs of inherited syphilis, such as well marked Hunterian teeth, enlarged cervical glands, etc. When the Medical Inspector called on me on the afternoon of the 9th instant, I mentioned the case to him, not as any suspicious case, but one into which he may look, owing to the unhealthy locality from where the child comes. I even told the Medical Inspector that two or three years ago I had treated the sister for syphilitic sore of one of her legs."

JOHN E. PANIOTY, *Resident Surgeon,*

Chandney Hospital.

Bacilli were found in the blood by Drs. Cobb and Simpson.

Case Nos. III and IV.—A Report on the cases of Plague in the Maniktola Isolation Hospital of Calcutta.

On the 13th of October Drs. Ross, Sanders, and Dyson inspected the Maniktola Isolation Hospital. Dr. Simpson was invited to attend, but was unfortunately unable to do so, as he did not get the letter in time.

The spot selected for the hospital appears a suitable one, and the erection of hospital sections is being rapidly carried out. There are two native doctors living in the enclosure, in tents, and a small brick building is utilized as a temporary hospital. It contained two cases, one named Tin Cowry Charan Pal, the other Heman Shah.

Tin Cowry Charan Pal is a Hindu boy and works in a jeweller's shop, and is thus brought considerably into contact with Marwaries. He has no history of any accident which might cause enlargement of the glands.

Previous history.—Had lymphatic swelling of the right thigh nine or ten years ago, forming deep-seated abscess, which had to be operated on. In 1895 was first affected with cholera, and then with small-pox ; for the last two years since he began to work, he has now, and then suffered from fever, cold and swelling of inguinal glands. On the 5th he was attacked by fever, and next day had slight swelling of the inguinal glands, which were a little tender ; he was treated for fever. Dr. Cobb and Dr. Simpson examined his blood and found bacilli. He was admitted into the Isolation Hospital on the 11th with a temperature of 103°. On the 12th it was 100° and on the 13th normal. He was found to be a fairly well-nourished boy of a cheerful appearance, with a clean tongue and clear eyes—no headache. The inguinal glands were slightly enlarged, but not markedly so. His tongue was clean, and he had no other symptoms.

Heman Shah, a boy, is by trade a hawker, and therefore exposed to all vicissitudes of temperature and climate. He was attacked on the 10th, and bacilli were found in his blood. When seen at hospital on the 13th, his temperature was 106, face a little sunken, breathing slightly quickened, eyes clear, no headache, tongue bright red, with the papillæ enlarged and prominent. He has gurgling in the iliac fossæ ; the inguinal glands are practically not enlarged. He has symptoms of commencing pneumonia in the left lung, and the rise of temperature may be due to it. He presents the appearance of an ordinary fever case.

Remarks.—If Tin Cowry Charan Pal's case is one of plague, it certainly is a wonderfully mild form. He acquired fever on the 5th, and two days after admission into hospital, where he is carefully treated and fed, is free from fever, and practically has no buboes.

It was decided at a meeting of the Corporation, the Mdical Board of Health being present, that these two cases might be discharged from hospital.

Case Nos. V and VI.—The suspicious cases in the Presidency General Isolation Wards.

On October 17th, Drs Ross and Dyson visited the Presidency General Hospital to examine two people who have been placed in the infectious wards as suspicious cases. They are respectively a small male child and a young man. Their histories are as follows :—

The child, 3 years of age, was born in Sylhet, and has repeatedly suffered from attacks of malarial fever. He has slightly enlarged glands under the jaw and in the armpits and groins, and has also inflamed tonsils. The glands are apparently not tender to the touch.

His temperature on Thursday, the 15th, rose to 102°. Present condition: no marked distress in the face; tongue clean; conjuntivæ morbidly white and glistening; no enlargement of the spleen. The child appears to have a scrofulous diathesis. No other symptoms of plague.

The young man, Douglas, is a bridge inspector; he states that he strained himself on the 23rd September, and found the glands of the left groin were slightly enlarged on the 26th. Five glands in all were enlarged. He continued his work, and walked regul-rly 2 to 2½ miles daily. He found that walking made the glands worse. He was admitted into hospital on the 13th October. He then had five enlarged glands; there are now only two, neither are markedly tender. His temperature has for days been normal. He is a poorly nourished man, with a thin face. His eyes are bright and clear, and he makes no complaint of headache. He has had blood abstracted for bacteriological purposes by Dr. Cobb, but the result is not known. He has been in the infectious ward two days. He looks as if he needed feeding up, otherwise seems healthy enough and comfortable.

The child has left the hospital some days ago; the other case remains under treatment.

CASE NO. VII.—CASE OF PLAGUE REPORTED IN KIDDERPORE.

No. 1123, dated Alipore, the 22nd October 1896.

From—SURGEON-CAPTAIN H. W. PIGLRIM, M.B., Offg. Civil Surgeon, 24-Parganas, Alipore,

To—The Secretary, Health Committee, C/o Inspector-General of Civil Hospitals, United Service Club, Calcutta.

WITH reference to your Circular No. 47, dated 16th instant, I have the honour to state that the Police asked me yesterday afternoon to examine a girl 3 or 4 years of age, by name Annoda, residing at Pearatolla, beyond Garden Reach; the case was said to have been reported by a native practitioner, Grish Chunder Ghose, as being a case of plague. I went and examined the child who had been suffering from slight fever, and now has a few of the cervical and occipital glands enlarged. There was nothing in the symptoms or condition of the child beyond the slight enlargement of the glands so common in children, to even remotely suggest the presence of plague.

CASE NO. VIII.—CASE OF PLAGUE REPORTED IN RAJA RAJBULLUB'S STREET.

Extracts from the Commissioner's Report Book, 1st Division, Town, Section A, Shampookur No. 4418 of the 4th November 1896.

AT 10 A.M. one K. M. Mukherjee of No. 252, Upper Chitpur Road, informed by a letter that one Bipin Bihari Dutt is suffering from glandular fever at No. 1, Raja, Rajbullub's Street. Medical Inspector at once informed.

No. 4446 of the 5th instant.

Referring to No. 4418 of yesterday's date, the Medical Inspector informed that he, together with Doctors Simpson and Cobb, saw the patient last night, and that they suspect it to be a case of bubonic plague, but they would not give any opinion until satisfied with microscopical examination. The patient died in their presence, and the place had been properly disinfected.

No. 10638, dated Calcutta, the 6th November 1896.

Memo. by—C. B. DRAKE-BROCKMAN, ESQ., Offg. Deputy Commissioner of Police.

FORWARDED to the Secretary to the Medical Board for information.

Dated Calcutta, the 5th November 1896.

From—W. J. SIMPSON, ESQ., M.D., Health Officer, Calcutta,

To—The President of the Medical Board.

I HAVE the honour to report a death from plague, which took place at 6-30 P.M. on November 3rd. Information was given to me about 4 P.M. on November 3rd, and the case was visited by Dr. Cobb and myself at 5-30 P.M. The patient died in our presence at 6-30 P.M., and as the friends would not give permission for a *post-mortem* examination, I ordered the Medical Inspector to accompany the body to the burning ghat, and to see personally that it was burnt along with the infected clothing. It was impossible to inform the Medical Board in time, in order that the medical members should see the case, owing to the man's rapid death. An attack of illness prevented me from reporting the case the next day, but I verbally told Dr. Dyson about it in the morning, and he expressed his intention of making a local enquiry.

The details are as follows:—

History.—Bipin Behari Dutt, aged 32 years, a sugarcandy maker, residing at No. 1, Raja Rajbullub Street, is stated to have been seized with a sudden attack of headache, fever, pain, and enlargement of the glands of the right groin on November 1st. The pain in the groin became so severe that he was confined to bed and could not straighten his leg. The symptoms increased in severity, and on November 2nd, about 3 P.M., the headache became intense and the abdomen swollen. At 8 P.M. he became insensible. Dr. K. M. Mookerjee states that he was called in at 10 P. M. on November 2nd, and found the patient in a comatose condition, picking at the bed clothes and in high fever, with congested eyes. The glands in the right groin were enlarged. He informed the friends that the case was a hopeless one, and the next morning sent a post-card to the Health Officer reporting the case. Another medical man, Dr. Chatterjee, was called in later, and, it is stated, found the temperature to be 104°. The patient is said to have scalded his toe more than a fortnight ago, but we found no marks on the foot.

Condition on examination by Dr. Cobb, Dr. Mittra, and myself.

The patient was lying insensible, breathing with a sighing and moaning noise. The eyes were sunken and the conjunctivæ very much congested. The direction of the eyes was upwards and to the right. The pupils were contracted and insensible to light. The tongue was furred in the centre and red at the tip and edges. Pulse was 160 and respirations 32 per minute. The body, especially the head, face, and legs, was covered with a profuse perspiration. Petechiæ in large numbers were to be seen on the chest and abdomen, and a few on the back, arms, and legs. They varied in size from $\frac{1}{10}$ th to $\frac{1}{4}$ inch in diameter, and did not disappear on pressure. Both the inguinal and femoral chains of lymphatic glands on the right groin were enlarged. Two of the former and three of the latter were felt to be swollen. In the inguinal region the largest was the size of a boy's marble, and in the femoral that of an almond. Blood was taken from the enlarged femoral gland and from the medium basilic vein. Microscopic examination showed diplobacteria.

Notes on a case of reported True Plague seen by Drs. Cobb and Simpson on Tuesday, the 3rd instant.

We were informed yesterday, the 4th instant, that a case of true plague had been detected at No. 1, Raja Rajbullub Street, on the 3rd instant (afternoon).

The case was seen and reported by Drs. Cobb and Simpson.

No intimation was officially given to the Board of Health until the 5th instant, and this despite the distinct orders upon the subject laid down in paragraph 5 of Government Resolution No. 937T., dated 10th October 1896.

Having received information from the Hon'ble H. H. Risley, C.I.E., privately on the 4th instant, we visited the house at once in company with the Ward Medical Inspector (Dr. Mittra).

We found that the room had been disinfected and washed out with carbolic lotion, and that MacDougal's disinfecting powder had been profusely strewn on the floor and in the court-yard. The roof had apparently not been touched and the woodwork showed no signs of having been washed down. Several apertures in the room had not been properly closed up, and sulphur has ceased to burn (18 hours after death).

The body was cremated, and all clothing and furniture had been burned under the personal supervision of the Ward Medical Inspector (Dr. Mittra).

Statement made by the employer and by the friends of the patient.

The deceased, Bipin Bihari Dutt, was in the employment of a sugarcandy merchant. It was stated that the patient's right big-toe had been scalded about a fortnight before his illness commenced. He had done his work as usual, and the effects of the scald had not caused any perceptible lameness, and he was able to walk about, and he never complained of having enlarged glands. On Saturday, the 1st instant, he was unable to go to work, and the reason given was that he was suffering from fever.

Statements by the medical practitioners who saw the case.

On Monday night the family physician, Dr. Mukherji, a homœopathic practitioner, was called in at 10 P.M. He found the patient unconscious, and his temperature was about 104°F. His attention was also drawn to the enlarged glands in the groin. Knowing that bubonic plague was suspected to be in Calcutta, and associating the enlargement of the glands with the high temperature and coma, he formed the opinion that it was a case of bubonic plague. He communicated his suspicions to the Police, and eventually Drs. Cobb and Simpson visited the patient. This homœopath stated that he did not notice any petichiæ, but saw a piece of cloth with some native drug on it applied to the enlarged glands. He also stated that had he had no suspicion of bubonic plague, he would have thought that this case was one of typhus. He evidently did not think there was any difference between typhodi and typhus.

It will be noticed that there was almost an interval of 20 hours between the time when the homœopath first saw the case and when it was visited by Drs. Cobb and Simpson.

He sent a post-card to the Health Officer, reporting the case as one of plague. Dr. Chatterji (an alopathic practitioner) visited the case about half-an-hour after Dr. Mukherji had left, and he gave us the following information:—

That a friend of the deceased's (a cooly) had told him that the glands in the right groin had been enlarged for about 8 or 10 days before the commencement of the illness. He noticed the plaster in the right groin, and found a small ordinary bubo, which had not suppurated, underneath it.

The patient was in a comatose state, and was suffering from fever.

His opinion was that the case was one of low remittent fever; and as the glands had been enlarged for more than a week, it never struck him that the case could be one of plague. He saw no petechiæ on the body. He found five or six coolies attending the patient and putting ice on his head; also that he did not think he would be able to recognise the cooly who gave him the information about the bubo. Having elicited this information from Dr. Chatterji, we returned to No. 1, Raja Rajbullub Street, and endeavoured to discover the cooly mentioned above. By this time the employer and his servants were in a considerable state of apprehension, and were unanimous in stating that practically nobody attended the patient except very intermittently, and that the greater part of the nursing was carried out by outside agency. We felt that under the conditions it was hopeless to expect to elicit any further information. We also visited Dr. Mukherji's dispensary, but he was out. He subsequently came to us in the afternoon, and his statement is recorded above.

Dr. Mukherji and Dr. Mittra are making enquiries as to where the materials for making the plaster were got from, and when it was applied to the enlarged glands. They are also trying to obtain information regarding the previous history of the case from the deceased's friends.

H. J. Dyson,
Sanitary Commissioner for Bengal.

Calcutta;
The 5th November 1896.

C. G. Robson-Scott,
Secretary, Medical Board.

Further report on the case of "True Plague" reported by Drs. Cobb and Simpson.

On the 6th we proceeded to No. 1, Raja Rajbullab Street, and found Babu Nolin Bihari Sircar waiting for us.

After a good deal of difficulty and hunting about we managed to find the friend (Bihari Lal Das) who had attended the deceased (Bipin Bihari Dutt) during his last illness, and he furnished us with the following particulars:—

I am an intimate friend of the deceased. I often met him, and I know that he led a fairly loose life. I had not seen him for ten days, when he sent for me on Saturday, the 31st ultimo. He was quite well the last time I had seen him. On visiting him I found that the patient was unable to go to his work. He was unable to walk by himself, so I was obliged to carry him to the latrine, and then I noticed his *dhotee* was loosened. I noticed that he was suffering from double orchitis, and the parts were swollen and red, and were painful to the touch, and the glands in his right groin were slightly enlarged, but they were not very tender. He had slight fever on Saturday evening. The patient scalded his right great toe with some boiling sugar five or six days before I saw him, and this laid him up temporarily. After four days he was able to limp about, and he returned to his work. It was after this that he suffered from double orchitis.

On Monday, the 2nd instant, he got very much worse, and he sometimes clenched his hands. I noticed that he had small red spots on his body, and when I asked him how they had come there, he said that there were too many mosquitoes about.

At this point Babu Nolin Behari Sircar pulled up one of his sleeves and showed us some red spots (mosquito bites) that were on his arm, and on being asked if the spots resemble those on the deceased's body, Bihari Lal Das said that they were exactly the same.

The mosquito bites on Babu Nolin Behari Sircar's arm did not disappear upon pressure.

He continued:—I attended to the patient from Saturday.

On Monday he became delirious, but before he got into that state he expressed a strong desire to return to his native village.

I noticed that there was a plaster on the enlarged glands: it was there when I first saw the patient, but I do not know where he got it from.

I went on Sunday and Monday to see him, and stayed with him all Monday night.

On Tuesday I remained with him till 11 A.M., and returned again at 5 P.M.

I was present when the doctors came on Monday night, but I did not inform them about the double orchitis. I did not notice any yellow stains on his *dhotee*, and I am not aware that he had venereal disease. All the occupants of the house and the coolies employed

by the sugar refiner knew of his condition, but none of them informed the doctors of the truth, and they must have lied to the *sahibs*.

Babu Nolin Behari Sircar states orchitis is not uncommon, but never produces fatal results.

H. J. DYSON,
Sanitary Commissioner for Bengal.

C. G. ROBSON-SCOTT.
Secretary, Medical Board.

CALCUTTA,
The 7th November 1896.

CASE No. IX.—CASE AT WOOLTADANGA.

No. $\frac{B}{108}$, dated Calcutta, the 6th November 1896.

From—W. J. SIMPSON, ESQ., M.D., Health Officer to the Corporation of Calcutta,
To—The President of the Medical Board.

I HAVE the honour to inform you that the following post-card has been received by me to-day:—

Dated Wooltadanga, the 4th November 1893.

From—BABU JOHUR LAL DUTT,
To—DR. SIMPSON.

THERE occurred a case of bubonic plague in Wooltadanga Saltpetre Factory. The man died yesterday at No. 42-24, Wooltadanga Road. You ought to see it is plague or not.

I have sent a Medical Inspector to make enquiries and hasten to give you the information, in order that the Medical members of the Board may make enquiries if they desire to do so.

Dated Calcutta, the 7th November 1896.

From—W. J. SIMPSON, ESQ., M.D., Health Officer to the Corporation of Calcutta,
To—The President of the Medical Board.

I do not remember this.
H. H. R.

IN continuation of my letter, dated yesterday's date, I have the honour to forward herewith a copy of the Medical Inspector's report on the Wooltadanga case.

HEALTH OFFICER—

WITH reference to the alleged case of bubonic plague reported to you by one Johur Lal Dutt, I beg to state that I had been to the Saltpetre Factory at 45-25, Wooltadanga Road, this morning.

It is on the other side of the canal, and is outside our jurisdiction. The deceased, name Goorbuksh Laul Hinon, male about 60 years old, had been laid up for 13 days. At first he had been suffering from obstinate constipation and pain in the abdomen.

Then he had persistent hiccough for five days. Subsequently he became speechless three days before his death on the 3rd November. There was no enlargement of any of the glands, nor any other suspicious symptoms. These are all the facts I could gather.

P. C. MITTRA,
Medical Inspector.

The 7th November 1896.

INTESTINAL OBSTRUCTION.

H. D.

No. 114B., dated Calcutta, the 16th November 1896.

From—W. J. SIMPSON, ESQ., M.D., M.R.C.P., Health Officer to the Corporation of Calcutta,
To—The Secretary to the Board of Health.

WITH reference to your letter No. 11, dated the 12th November 1896, I have the honour to refer you to the Medical Inspector's report, which was forwarded to the Board on the 7th instant, and which states that from enquiries he did not think that the man who died at 42, Wooltadanga Road, was a case of plague, and secondly, it was beyond the limits of the Municipality of Calcutta. For these reasons the matter was simply reported to the Board, and no action taken.

CASE No. X.—CASE IN ARMENIAN STREET.

No. 113B., dated Calcutta, the 10th November 1896.

From—W. J. SIMPSON, ESQ., M.D., Health Officer, Calcutta Municipal Corporation,
To—The President, Medical Board.

I HAVE the honour to submit the following report on a case of pestis ambulans and on an unusual mortality among rats:—

Case of Giga, aged 4 years, son of Hardat Roy of 13, Armenian Street.

Dr. Charles wrote to me on October 30th to the effect that he had just seen in consultation with Dr. Bilimoria a case which he thought ought to be examined The details given by Dr. Charles are as follows:—"Child Giga, aged 4 years, son of Hardat Roy of 13, Armenian Street, ill about ten days, fever and slight bronchial catarrh, glands of left axilla enlarged to size of small marbles; those of right axilla enlarged, but less so; glands of right groin palpable; one gland in left groin inflamed, and will suppurate; sub-occipital glands can be felt, but do not count, as the child has had eczema of auricles. The definite clinical signs of a typical case of plague not there, but I consider it certainly as good a case as I can imagine for the examination of blood.

"*Present condition.*—Fever continuous with exacerbations, bronchial catarrh, glandular enlargements, tenderness on pressure over liver, a vesicular and papular rash has been out; not seen to-day."

On October 21st I visited the house in company with Dr. Bilimoria, and found the patient in the same state as noted above. His temperature on the 30th October was 101·8 in the morning and 100 in the evening. On 31st October temperature 99·4, pulse 120, tongue furred in the centre, tip and edges red, bowels inclined to be constipated.

On November 1st the patient was seen by Dr. Cobb, Dr. Bilimoria, Dr. Chatterji and myself.

The gland in the groin was opened and found to contain pus. Specimens of blood and pus were taken.

The blood on examination was seen to contain diplo-bacteria.

On enquiry into the circumstances of the case we found that the people in the house were Marwaries, who had communications with Bombay and received goods (clothing and yarns) from that city.

After having completed our examination of the patient we went downstairs to inspect the godowns where the bales from England and Bombay were stored. While inspecting these we noticed a large grey rat sitting on a step, looking very ill; it had a staring coat, watery eyes, and did not attempt to move though surrounded by people. The rat was caught and taken to the laboratory, where it was killed and immediately examined.

Post-mortem *examination of the rat.*

On deflecting the skin from the abdomen and groins, two enlarged glands, the size of small beans, were found in the right groin. In the left groin two glands were found very much congested and agglutinated together.

In the left axilla was one enlarged gland, the size of an almond.

Lungs were a pale greyish colour, with dark mottled patches.

Spleen was congested and enlarged.
Abdominal glands were enlarged.
Kidneys were intensely congested.
Liver was enlarged and congested.

Blood was taken from the heart, liver, and spleen, and examined under the microscope and found to contain diplo-bacteria. Blood from these organs was also put into nutrient media, with the result that pure cultures of diplo-bacteria were grown, closely resembling those found in the plague patients.

As a control experiment the blood, liver pulp and spleen pulp of 7 healthy rats were examined with negative results. Similarly, the blood and the spleen pulp of the healthy rats were put into nutrient media, and no growth of diplo-bacteria was found.

In connection with this observation I think it important to inform the Board that within the last few days an unusual sickness among rats in Jorabagan has been observed. Whilst the special establishment recently granted by the Municipal Commissioners for cleansing the premises of houses was working at 81, Burtolla Street, the Inspector of the gang noticed an unusual number of dead and sick rats. He reported the circumstance to Dr. Banks, who, ascertaining the correctness of the statement on personal inspection, reported the matter to me.

I visited the house with Dr. Cobb on the 9th November: we saw 8 dead and 2 sick rats. 81, Burtolla Street, is a grain depôt, and is in a very dilapidated and insanitary state, so much so that I have recommended it to be closed as unfit for human habitation.

The grain is brought from the Howrah Railway godowns, and some of it is stated to have come from Bombay.

We next visited a neighbouring grain shop, 14, Burtolla Street. The owner at first stated that he had noticed an unusual mortality among rats, but he afterwards denied it.

Mr. Scott, one of the Inspectors of the special establishment in this locality, has lately observed a large number of sick rats in the streets with their hair partly or wholly fallen off. They creep about and are stoned by boys and sweepers, who make it a form of amusement. The two sick rats caught at 81, Burtolla Street, were taken to the laboratory. One of them died shortly afterwards, and was not examined. No. 2 died at 3-30 P.M. and was examined at 4-15 P.M. The liver was found enlarged and congested, and spleen very dark in colour. Specimens of the spleen and liver showed diplo-bacteria in large numbers.

Later in the day (November 9th) 7 more sick rats were caught and sent to the laboratory. Of these, I forwarded two to Dr. Cunningham. One of the remaining five was killed and examined. The axillary glands on right side were much enlarged. The liver was enlarged. Specimens of blood, spleen pulp and liver pulp contained diplo-bacteria. The heart blood was put into culture media.

In consequence of the Board having recorded their opinion that the former cases of glandular swellings with fever reported by me were not cases of true bubonic plague, I hesitated to report the case Giga at 13, Armenian Street, though owing to my investigations at the laboratory, I satisfied myself they were cases of bubonic plague.

The occurrence, however, of a case of pestis ambulans at 13, Armenian Street, and the discovery at the same time and in the same house of a diseased rat containing diplo-bacteria in its blood and organs, combined with the subsequent unusual sickness and mortality among rats in parts of the town, have induced me to lay these facts before the Board. I consider these facts are of serious import, as showing that the micro-organism of plague is gradually gaining a foothold in the city of Calcutta.

CASE No. XI.—CASE IN WARRIS BAGAN LANE.

Dated Calcutta, the 12th November 1896.

From—W. J. SIMPSON, ESQ., M.D., Health Officer of the Corporation of Calcutta,
To—The Secretary, Board of Health.

I HAVE the honour to forward you a copy of a letter just received (6-30 P.M.) from the Officiating Commissioner of Police.

Dated Calcutta, the 12th November 1896.

From—H. PAGET, ESQ., Officiating Commissioner of Police,
To—The Health Officer of the Corporation of Calcutta.

I HAVE the honour to inform you that one John Marcellies, of No. 13, Warris Bagan Lane, cook's mate, died on the way to hospital this day.

He had fever last night and swelling in the groin. His body has been removed to the morgue in the Medical College Hospital.

No. 14, dated Calcutta, the 14th November 1896.

From—SURGEON-CAPTAIN C. G. ROBSON-SCOTT, Secretary, Medical Board,
To—The Police Surgeon, Sealdah, Calcutta.

I AM directed by the Medical Board to request the favour of your submitting a full report upon the *post-mortem* examination on John Marcellies, a cook's mate, of No. 13, Warris Bagan Lane, who died on the 12th instant from suspected plague, and whose body was sent to the Medical College Morgue yesterday.

No. 258, dated Calcutta, the 16th November 1896.

From—SURGEON-MAJOR J. B. GIBBONS, Police Surgeon, Calcutta,
To—The Secretary to the Medical Board, Calcutta.

IN compliance with your No. 14 of the 14th instant, I have the honour to forward a report on the *post-mortem* examination of the body of John Marcellies, together with a copy of the "particulars of cause of death as far as known," sent to me by the Superintendent, 2nd Calcutta Division, with the request to examine the body and furnish a certificate of the cause of death for the information and orders of the Commissioner of Police.

As the request reached me late on the afternoon of the 12th instant, I determined to make the *post-mortem* next morning. In the evening about 9 P.M. Dr. Cobb, accompanied by Dr. Simpson, Health Officer, came to my house to ask permission to take blood from the heart, and from them I learned that the case was suspected to be one of plague. As they were anxious to take the blood at once, and the case was apparently of no particular medico-legal importance, I gave the permission, and they went on to the morgue.

I held the *post-mortem* examination at 7-30 A.M. on the 13th instant in the presence of Drs. Bomford and Bird. Cover glass preparations were made by Dr. Bird from the enlarged saphena glands and from blood taken from the saphena vein in the middle of the leg.

Particulars of cause of death as far as known.

The deceased, aged about 16 years, lived at No. 13, Warris Bagan Lane. He was employed as cook's mate at the Great Eastern Hotel, and did not go to work yesterday, the 11th instant. At 7 A.M. yesterday he stated to "Punna Lall Mug" his companion, who shared the same room as himself, that he had very strong fever and had swelling in his groin. Punna Lall Mug also states that his swelling on the groin was lanced about a year ago; the deceased's sister, Miss Jane Marcellies, and Pobi Bewah also speak to this fact.

He is a pauper, and was removed to the Medical College Hospital in a palki, and was accompanied by Edwin Pereira, of 13, Warris Bagan, and on the palki landing at the hospital he was found dead.

E. ROBERTSON,

Dated 12th day of November 1896, 2¾ P.M. *Superintendent, 2nd Division.*

On the 13th November at 7-30 A.M. I examined the body of a native male, aged about 17 years, identified by Corporal Abdul Latif to be that of John Marcellies *alias* Tootoo.

Body well nourished; *rigor-mortis* present in the legs only. Signs of decomposition—green discolouration of abdomen, superficial veins of a red colour, odour of putrefaction.

Three small, thin, old scars in the left femoral region. Left saphena glands enlarged. The largest a circular disc about the size of a rupee and ¼ inch thick; gland substance pale red in colour.

Lungs—old fibrous adhesion to the chest walls; substance congested. Bronchi filled with muco-purulent fluid and congested.

Heart—right side full of blood; end-cardeum stained by hæmoglobia; left side empty; muscle substance paler than usual; no valvular disease.

Liver—congested and greasy looking on section.

Spleen—soft and congested.

Kidneys—congested.

Stomach—healthy; contents about 4 ounces of watery fluid.

Intestines—healthy; contained bilious fœces.

Brain—vessels of meninges full; brain substance healthy.

No mark of violence.

From the history of the case and the *post-mortem* appearances, I am of opinion deceased died of fever and bronchitis.

J. B. GIBBONS.

CASES IN FORT WILLIAM.

Demi-official from—SURGEON-LIEUTENANT-COLONEL R. COBB, M.D.,
To—His Honour the Lieutenant-Governor of Bengal.

I WRITE to you on a most important and urgent matter which has come to my knowledge recently.

You remember the case of plague which occurred at Howrah on October 8th in a boy who arrived from Bombay. He suffered from glandular enlargements and a little fever, but was able to walk about.

Dr. Simpson and I examined him and took specimens of his blood, and submitted them to microscopical and bacteriological examination. We found bacilli in them indentical with the plague bacilli.

When our certificate was published, it attracted the attention of Surgeon-Major S——r of the Station Hospital, who wrote on October 10th, and gave me a history of the soldiers in Fort William suffering from buboes which he had long decided were not syphilitic, and he asked me to see a few of the cases with him.

On the 11th October I visited the Station Hospital and found these men to be suffering from a similar affection to that of the Howrah patient. On the same day I took specimens of the blood, and Dr. Simpson and I examined them together and saw they (*i.e.*, the bacilli) were similar in every respect to those found in the blood of the Howrah case.

In the meantime the Howrah bacillus had been cultivated and compared with the Bombay bacillus, and they, too, were found to be identical. After this Dr. Simpson and I, with the consent of Surgeon-Lieutenant-Colonel M——y and Surgeon-Major S——r, visited the Station Hospital on the 13th October, and examined ten of the patients very carefully, and found they were suffering from glandular enlargement of the groin, and many of them much pulled down from the effects of the disease. We took blood from the arms of two and transferred it immediately into culture media.

In three days characteristic growths appeared in some of the cultures, and a microscopical examination showed them to be the same bacilli as we had found in the Howrah and Bombay specimens. The next important point is that the Shropshire Regiment came from Hong-Kong, and, you will remember, the men were employed in cleaning out the plague-infected houses, and for that work they received a testimonial which they call the "Plague Cup." About this time, I am informed, two soldiers died of the plague, and whilst at Hong-Kong other soldiers began to be affected with glandular swellings in the groin and fever.

They came to Calcutta in January 1895, and ever since their arrival some of the soldiers have been laid up with this peculiar illness and glandular enlargements, new drafts of men being affected who had never been in Hong-Kong.

It was at first thought to be syphilis, and then careful consideration of the symptoms excluded this, and it was found that people who were above suspicion of syphilis got the disease.

Then it was considered to be malarial origin, but malaria is not a disease which is of any particular prevalence in the Fort, and glandular swellings of this nature have never before been noticed in other regiments who have occupied the Fort previous to the arrival of the Shropshire Regiment, and, moreover, glandular enlargements are not a symptom of malarial poisoning.

Last July Surgeon-Major S——r, who had seen a large number of these cases while on leave at Simla, was attacked by peculiar shiverings, which he noticed were quite different from ague and were not followed by fever, but were followed by glandular swellings in the groin, from axilla, elbow and neck: although better, he is still suffering from the effects of the attack: our examination of his blood showed the same bacillus.

A number of the men suffering from this disease have been, and are being, sent up to Jallapahar for the benefit of their health.

P.S.—Probably the mildness of the cases in the Shropshire Regiment is due to the fact that they have a bacillus of a declining epidemic, and also because they are sorrounded by the best hygienic conditions, but this does not prove that they might not become very dangerous under other circumstances.

R. C.

Dr. Cunningham subsequently repeatedly examined the blood of these cases and failed to find any typical bacteria.

With reference to these cases of non-venereal bubo, the accompanying article from the *British Medical Journal*, by Chas. C. Godding, furnishes interesting reading.

Surgeon-Lieutenant-Colonel May's note shows that non-venereal bubo existed among the troops in Calcutta in 1890, though the Shropshire Regiment did not arrive till 1895.

On non-venereal Bubo, by Chas. C. Godding, m.r.c.s., *Fleet Surgeon, H. M. S. "Centurion," Chefo.*

(Communicated by the Director-General of the Medical Department, R. N.)

Non-venereal bubo, commonly spoken of as climatic or sympathetic bubo, might be called lymphoma or adenoma. The disease is characterised by fever, enlargement of inguinal glands in one groin (seldom in both), increasing malaise, and anæmia. The inguinal glands are invariably attacked; lymphatic vessels, or glands in other situations, never, marking the difference from lymphadenoma.

Etiology.—For many years I have been in the habit of associating these cases entirely with foreign service, and of calling them "climatic bubo;" but on looking up the "Health of the Navy" for the seven years 1888 to 1894 inclusive, I was greatly surprised at the total number of these cases, and also to find how many occurred in the Home and Irregular Forces. (See statistics). This would be accounted for to a certain extent in the Home Force by cases occurring in men recently returned from abroad, and in the Irregular Force by its employment on almost constant foreign service.

I consider the disease to be primarily constitutional, as indicated by the fever, and the bubo as purely a local symptom, but how this constitutional condition is produced, or why the inguinal glands alone are invariably attacked, is difficult to ascertain; and though the large number of cases occurring in the Home and Irregular Forces militate against the name "Climatic," yet climatic influences appear undoubtedly to play a considerable part in the causation of this disease. For instance, the East Indian Station gives nearly four times as many cases per thousand as the Mediterranean, and the China Station, where lymphoid diseases are common among the natives, comes next in order in the production of these cases, with three times as many as the Mediterranean. On the other hand, the Mediterranean, Australia, and West Coast of Africa give comparatively few cases, and are therefore climates non-provocative of this disease. I have myself seen the worst cases on the East Indian Station, at Zanzibar and adjacent coasts, the patients having huge masses of glands in the groin, often suppurating, progressive anæmia and debility.

The immediate cause of the bubo appears to be sometimes a slight sprain; at others superficial abrasion on penis or toes; while in some no apparent cause at all can be discovered;

but in all these cases the presumed cause (or what the patient judges to be the cause) is quite insufficient to account for the long train of symptoms which follow, and are trivial accidents which would have been quickly recovered from, had not the patients been constitutionally ready for the excitation of this disease. Of eleven cases I have recently treated, four gave a history of slight sprain, in four no cause at all could be discovered, two had small superficial sores on penis, and one man a small abrasion on the toe. In four of these cases the glands suppurated. Age has apparently no influence. Five cases occurred between the ages of 19 and 25; two between 25 and 35, and three in men over 35.

Statistics.—In the seven years from 1888 to 1894 inclusive, the average strength of the Royal Navy being 56,180 per annum, 733 cases of bubo was the yearly average. During the whole period twenty men have been invalided from the service, and nine have died, principally from exhausting suppuration from the buboes; in one fatal case femoral was ligatured

The number of these cases varies considerably from year to year, but these figures show that the disease is a formidable one.

The worst stations are (1) East Indies, 31 cases per 1,000 of strength; China, 25; and West Indies, 22. Stations least affected are (1) Mediterranean, 8 cases per 1,000 of strength; Australia, 9; and West Coast of Africa, 13. The Home and Channel, with an average force of 27,000 men, gives 287 cases annually, or about 10½ per 1,000.

Symptoms.—In nearly all cases the patient's first and only complaint is simply the pain and swelling in the groin; he feels quite well in himself, but "the lump is getting larger." There may be a history of sprain or trivial injury, but almost as often there is no apparent cause. There is, however, a rise of temperature in nearly every case.

Course and duration.—The ordinary disease runs a fairly regular course of increasing fever and enlargement of glands, lasting two to four weeks, the resulting bubo being a large conglomerate swelling. Secondly, a decline of fever and resolution of glands, lasting about a similar period, and the whole covering a period of three to eight or nine weeks; severe cases, of course, lasting much longer. The eleven cases before referred to give an average of forty-four days' sickness; the shortest twenty-six, and the longest seventy-six days. I consider a cure effected in four weeks as very satisfactory. Frequently towards the end of the inflammatory stage, from fifteenth to twentieth day of sickness, the bubo becomes very boggy, and fluctuation is simulated very completely. I have never explored them to see if pus had formed. The buboes also vary from day to day, increasing or decreasing with exacerbations and decline of temperature.

Cases of Inflammation of Lymph Glands taken from the records in the Station Hospital, Calcutta.

Dated the 22nd October 1896.

From—Surgeon-Lieut.-Colonel W. Allan May, a.m.s., Medical Officer in charge, Station Hospital, Calcutta,

To—The Principal Medical Officer, T. D., Calcutta.

I have the honour to forward accompanying record of cases of inflammation of lymph glands, with a few short remarks which may be of use at the meeting of the Medical Board this morning.

Record of cases of Inflammation of Lymph Glands occurring in the Calcutta Station Hospital from 1890 to 21st October 1896.

	1890.	1891.	1892.	1893.	1894.	1895.	21st October 1896.
1	2	3	4	5	6	7	8
Inflammation of lymph glands, cervical...	3	2	3	1	1	2	4
Ditto ditto, axillary	1	...	...	...	..	1	1
Ditto ditto, inguinal	27	39	26	38	19	39	41
Ditto ditto, femoral	...	...	...	..	..	...	1
Ditto ditto, buccal	1	...	...	...	...	...	...
Total ...	32	41	29	39	20	42	47
Total admissions for all diseases ...	2,207	1,765	1,418	1,242	1,212	1,717	1,254

I.—1st Shropshire Light Infantry arrived from Hong-Kong, 8th January 1895, bringing two men suffering from inflammation of lymph glands, and during the year 1895, 36 more cases occurred in this regiment, of which number *14 were in men who had not served in Hong-Kong.*

II.—In 1896 to date (21st October 1896) 47 cases have occurred. Of these, 41 can only be traced (the other 6 having left the station). Of these 41 cases, *25 occurred in men who had never been in Hong-Kong.* Of the remaining 18 cases, none of them had suffered previously at Hong-Kong from inflammation of lymph glands.

III.—Of the 47 cases, 4 attacked men of other corps.

IV.—*No deaths have occurred from the disease.*

V.—In 1891 there were 41 cases. These occurred amongst the 1st East Kent Regiment and 21st So. Div., Royal Artillery—*neither having been in Hong Kong.*

VI.—Of the 47 cases occurring in 1896 (to 21st October), in 3 there was the exciting cause of sore feet, and in 3 others a *possible* venereal taint.

W. ALLAN MAY, A.M.S., *Surgn.-Lieut.-Colonel,*

In Charge, Station Hospital, Calcutta.

APPENDIX III—B.

No. 250, dated Calcutta, the 10th February 1897.

From—W. B. GWYTHER, Esq., Secretary to the Medical Board,

To—The Secretary to the Government of Bengal, Municipal (Medical) Department.

THE attention of the Medical Board has been drawn to a Note by Dr. W. J. Simpson, Health Officer to the Corporation, published in the *Englishman* of the 6th February, from which we extract the following passage :—

> In October last, whilst visiting a case of *pestis ambulans* in Barra Bazar, I noticed in the warehouse below, containing goods received from Bombay, a diseased rat which, being caught and examined in the Laboratory, was found to be suffering from enlarged glands and to have in its blood and organs a bacillus similar to that found in the plague patient.
>
> This case caused me to institute an enquiry into the subject, and it was found that in two grain shops in Barra Bazar a number of rats were diseased and dying with similar symptoms to the rat first examined, some having chains of suppurating glands.
>
> Measures for specially cleansing and disinfecting these grain-shops were undertaken, and one of them was closed, and the inhabitants removed, these drastic measures resulting in the stamping out of the commencing epidemic.
>
> With plague so extensive in Western India, it is time that special measures should be taken to prevent the granaries becoming the centres of infection. I would suggest—
>
> (1) That special precaution should be taken in despatching the grain from infected areas. The *bags should be disinfected*, and care should be taken that no rats should be allowed to remain with the bags. This could easily be done at the place of despatch.
> (2) On arrival, a second inspection should be made and all rats destroyed.
> (3) The warehouses in Howrah should be constantly inspected, and every precaution taken to keep them clean and disinfected, and the rats destroyed.
> (4) The fourth measure should be taken in Calcutta itself. I have pointed out the danger of grain depôts, and when I state that these are situated in the most crowded and insanitary localities of Calcutta, the danger is obvious, and the importance of taking early and drastic measures to deal with them cannot be underrated.
>
> I therefore propose to establish grain marts in suitable open localities in order that all the grain depots may be closed, and by that closure to have them thoroughly cleansed and disinfected with the destruction of all the rats.

2. It will be observed that in this extract the Health Officer states explicitly that in October last a case of *pestis ambulans* occurred in Barra Bazar, and in the same sentence describes the person suffering from the disease as a "plague patient." He then speaks of a "commencing epidemic," presumably of plague, having been stamped out by "drastic measures," one of which was the closing of a grain-shop and the removal of the inhabitants; and he goes on to suggest that bags used for packing grain coming from infected areas, among which, on his own showing, Calcutta should be ranked, should be disinfected; that all existing grain depôts should be closed; and that grain marts should be established in special localities. The entire passage purports to recite ascertained facts; it makes no reference to any doubt or difference of opinion having existed as to the occurrence of even a single case of plague in Calcutta; it affirms, as a matter beyond dispute, that an epidemic of plague *did* commence there in October last; and it studiously ignores the contrary opinion arrived at after full inquiry by the Medical Board, and published in their Note of the 1st December 1896. In that Note and its appendices we gave a full history of all the alleged cases of plague; we expressed an emphatic opinion that in none of the cases, including that of Bipin Bihari Dutt, did the clinical symptoms correspond with those of true plague; and we endeavoured to show that the cases reported to us as plague had been so described on the strength of a palpably erroneous opinion as to the origin and character of certain microscopic organisms. Since then further evidence bearing on the bacterial side of the question has come before us. It will be seen from the Note annexed that our colleague, Dr. Cunningham, has succeeded in proving, by a series of test experiments, which admit of being repeated indefinitely, that the so-called plague-bacilli discovered by the Health Officer were the result of aerial contamination, and that their appearance in samples of blood taken from certain patients by Dr. Simpson does not prove that these persons were suffering from plague.

3. The Health Officer's theory of plague in Calcutta must therefore now be regarded as absolutely and finally destroyed; but apart from this, we desire to lay stress upon the flagrant breach of official propriety which has been committed by Dr. Simpson. He was well aware of the important interests likely to be affected at the present time by the publication of a statement that in October last an epidemic of plague commenced in Calcutta; and he must have known that his proposal that bags used for the carriage of grain should be disinfected was eminently calculated to suggest to foreign Governments and rival manufacturers the advantages, both sanitary and commercial, of placing an embargo on all produce conveyed in Indian gunny-bags, and thus dealing a serious blow to the jute manufacturing industry of India. The fact that just at the time when the Government of India is attempting to convince foreign Governments that Calcutta is not suffering from plague, Dr. Simpson should have published, or allowed to be published, or should even have written, without special precautions against publication, a Note containing the unqualified statement that an epidemic

of plague appeared in Calcutta four months ago seem to us to call for serious notice on the part of the Government, and we would suggest that the Chairman of the Corporation should be directed to call upon Dr. Simpson to state categorically whether the note in question was communicated to the Press by him or with his knowledge. If this has been the case, we consider that his conduct deserves the severest censure, and that special orders should be passed by the Chairman to prevent the recurrence of a similiar indiscretion. We would further ask that the attention of the Government of India may be directed to the injury to trade which statements of this kind are likely to cause if they should come to the notice of continental powers.

Note by BRIGADE-SURGEON-LIEUT.-COL. D. D. CUNNINGHAM, F.R.S., C.I.E.

IN a previous Note regarding the alleged bacteriological demonstration of the occurrence of cases of plague in Calcutta in October and November, it has been shown that the evidence was of no value on the following grounds:—

1st.—That in certain cases there was unequivocal evidence that the samples of blood from which cultivations of alleged plague bacilli had been obtained were, from the outset, contaminated from external sources.

2nd.—That the growths present in what were affirmed to be type-specimens of cultivations of Calcutta plague-bacilli which had been obtained from the blood of different alleged cases of plague, were absolutely different in different instances.

3rd.—That in no case did the growths accurately correspond in character with those of type-specimens obtained from Bombay from M. Haffkine.

4th.—That specimens of blood, taken from cases, which on bacteriological grounds had been affirmed to be unequivocal cases of plague, failed to yield any growths whatever when taken and cultivated under conditions unfavourable to extraneous contamination

5th.—That the evidence derived from the results of inoculating animals with the alleged plague-bacilli was of no value whatever, because of the method in which the experiments were carried out.

I have now to point out that all of the so-called Calcutta plague-bacilli may be readily obtained from specimens of the blood of perfectly healthy animals under the influence of brief exposure to air, even in scrupulously clean localities, such as my laboratory is, in which the air is in no way exposed to any special chances of bacterial contamination.

The data derived from the following experiment will probably be sufficient to demonstrate this.

On the 11th December 1896 about 30 c.c. of blood were drawn from the jugular vein of a perfectly healthy fowl, under strictly aseptic conditions, into two steriiised test tubes, A & B, stoppered, as usual, with cotton-wool plugs. Half an hour later the plug was removed from tube A and small quantities of blood were introduced into 4 watch glasses exposed to the air for 20 minutes, and then set in an incubator.

Cultivations from these specimens subsequently yielded growths, which in all microscopical and macroscopical characters were identical with

1st.—The only growth yielded by a cultivation of blood sent to me by Dr. Cobb, and derived from an alleged case of plague at Chinsura.

2nd.—The growth from another type-cultivation, obtained from a man named Feney in the Station Hospital, and sent me by the Health Officer of Calcutta as a type-specimen of plague-bacilli.

3rd.—The large putrefactive bacillus which was present in the original specimen of blood, and in the bouillon-cultivation of the latter, sent to me by the Health Officer of Calcutta as evidence that a man named Bepin, who died in Calcutta early in November, had been suffering from plague.

The tube B containing the other sample of blood was sealed up after a few days to avoid evaporative loss, and showed no signs of decomposition up to the 31st December, or three weeks after it had been taken. Three cultivations of it were then made and yielded no growth whatever. On the 3rd January portions of the clot were removed, set in four watch glasses, exposed in the open laboratory for 20 minutes, and then placed in an incubator.

Decomposition rapidly set in in all of them, and they subsequently yielded growths of the following characters:—

1st—The large putrefactive bacillus, noted above as occurring in the Health Officer's specimen of blood, and his cultivation of the latter from the case of Bepin.

2nd.—Small cocci of diplo-cocci similar to those in the Health Officer's cultivation of the same case, but more closely agreeing in characters with those described as distinctive of the plague-bacillus, in that they were completely bleached by treatment with solutions of iodine according to the method of Gram.

3rd.—A schizomycete, which in all characters, macroscopical and microscopical, was similar to that which was present in a cultivation derived from the blood of the man Cotta in Howrah, and supplied by the Health Officer as a type-specimen of plague-bacilli.

The evidence here is as complete as it well could be. The results in the case of sample B show that the blood previous to exposure to air contained no bacterial organisms, and those following even brief exposure of portions of A and B to the chance contamination equally clearly demonstrate that various forms of schizomycetes, presenting all the distinctive characters of those alleged by the Health Officer to be specific plague-bacilli, are common ærial contents, and therefore liable to appear in any cultivations of blood not conducted under strictly aseptic conditions.

D. D. CUNNINGHAM.

The 7th February 1897.

APPENDIX IV.

SANITATION OF CALCUTTA.

109042

APPENDIX IV-A.

Sanitary Inspection Report on the Calcutta Municipality by SURGEON-CAPTAIN J. C. S. VAUGHAN, *Deputy Sanitary Commissioner, Western Bengal Circle;* SURGEON-CAPTAIN B. H. DEARE, *Deputy Sanitary Commissioner, Northern Bengal Circle;* SURGEON-LIEUTENANT E. S. PECK, SURGEON-LIEUTENANT C. D. DAWES, *and* P. R. HAY-JAGANNADHAM, B.A., M.B. C.M., (*Edin.*) *Officiating Deputy Sanitary Commissioner, Metropolitan and Eastern Bengal Circle, dated Calcutta, the 28th October 1898.*

HAVING completed a sanitary survey of Calcutta, we have the honour to forward our report under the following heads:—

I. Overcrowding of houses and bustees.—The following table shows the area and population of the wards:—

Name of Ward.	Area in acres.	Population.	Population per square mile.
1	2	3	4
Ward I ...	409	36,885	56,960
„ II ...	217	26,614	78,080
„ III ...	403	36,431	57,6 0
„ IV ...	320	34,828	69,760
„ V ...	243	39,180	103,040
„ VI ...	262	41,657	101,120
„ VII ...	217	20,646	60,800
„ VIII ...	224	50,781	144,640
„ IX ...	460	49,472	68,480
„ X ...	147	22,668	98,560
„ XI ...	166	20,768	81,000
„ XII ...	211	6,083	17,920
„ XIII ...	192	28,366	94,080
„ XIV ...	198	29,207	94,080
„ XV ...	179	13,218	46,720
„ XVI ...	153	4,620	19,200
„ XVII ..	128	4,598	22,400
„ XVIII ...	108	4,820	28,160

The city of London, within the Registrar-General's tables of mortality, has an area of 74,672 acres and a population of 4,211,743, or 35,905 to the square mile. These figures give the highest estimate of population per square mile obtainable for London within various boundaries.

As far as we have observed, there is very considerable overcrowding in every one of these wards. In Colootollah, Ward VIII and others, the overcrowding is positively dangerous to public health. We were informed by the Inspector that there were, for instance, 250 people in one house, in which we consider the accommodation was not certainly enough for more than 50 people. For more definite examples, we submit the following as noted:—

In Ward I in Russick Lal Ghose's Lane, in a room measuring 7-6 × 10-6 × 10 with no windows, tiled roof coming down on to mud walls, there were 5 people accommodated, besides room for cooking fires and belongings, giving each man about 157 cubic feet. In Ward V, No. 81, Grey Street, in a room 11 × 8 × 7 as before, 5 people were accommodated, giving 123 cubic feet per man. In Ward V, in a room 13 × 8 × 9 feet, full of rags and clothes, with cooking accommodation, there were 7 people, giving 133 cubic feet per man. In Jeliatolla *bustee* in a house 7 × 7 × 6, *i.e.*, with 294 cubic feet, no window, and cooking done in the same room, we found 6 male occupants, giving 49 cubic feet per man. In Madhab Babu's Bazar, we have another house, 7 × 7 × 9, occupied by 4 men, allowing 110 cubic feet per man, and another 7 × 7 × 7, or 343 cubic feet, occupied by 5 people, giving 69 cubic feet per man; cooking also done in these rooms. We need hardly quote more than this, and would point out that in barracks the minimum allowance per person is 600 cubic feet, and the premises are ventilated freely and kept clean. Here we found an allowance per man going as low as practically $\frac{1}{10}$th of that given in barracks, and no ventilation, with filth *ad lib.* both in the room and in its surroundings, to say nothing of the filthy persons of its occupants, the sewage round in the adjacent drains and the accumulated filth in the neighbouring latrines, and to this may be added the fact that the subsoil on which the huts are built is soaked through and through with sewage matters and littered with garbage and filth of all kinds. In Marwaritolla the houses are separated from each other by narrow gullies, so cramped that coolies cannot possibly get down there to clean them out, and when we further state that the majority of these gullies are a foot deep in absolute sewage filth, and that they are freely used as latrines and urinated in, we only wonder that with such

overcrowding, combined with sewage air pollution, the public health is reported to be so good as it is.

In No 17, Durpo Narayan Tagore's Street, the houses are built almost back to back. It would nearly be impossible to squeeze between them; sunlight is so far shut out that, with board daylight outside the gully, it is absolutely impossible to do more than grope your way from one part to another within these tenements; rats run about here in the dark as they would at night; a heavy sickening odour pervades the whole place; walls and floors alike are damp with contamination from liquid sewage, which lies rotting, and for which there is no escape. From the gully between Nos. 21 and 22, Moirahatta Street, ten cartloads of offensive matters were removed; this gully was so narrow that it was impossible to walk straight down it, the coolies having very great difficulty in using their *kodalies*. Jammed in among these overcrowded huts are cluster of filthy, dilapidated privies, which are fouled beyond description with their drainage discharging into the little space that is left, and polluting everything. In many cases it is practically impossible to walk into the spaces between and behind the huts, where the ground is damp with liquid sewage, and the stench is simply overpowering. If any further argument is required, we would refer to table I, which shows that with all this the population reaches as high as 144,640 per square mile. Other native cities have been reported on as being bad enough, but the metropolis, which should serve as a model, is obviously at least five times as overcrowded as the most overcrowded municipality in Bengal, Bihar and Orissa—*vide* Sanitary Commissioner's report, 1895-96.

The only remedy which will be of any use at all is—

(*a*) the cutting of wide roads through these overcrowded areas;
(*b*) the limiting of gullies to a minimum width of 12 feet at least;
(*c*) inasmuch as from the very character of the present buildings, which in the case of *bustees* are constructed of filth-retaining materials, it is absolutely impossible to clean or to keep them clean. It is our opinion that no real sanitary improvement can be effected so long as these tenements be allowed to remain. There is nothing left, therefore, but to recommend the absolute demolition of these filthy huts and their replacement by decent model workmen's houses, as may be seen in Bombay.

In Marwaritolla, which is perhaps the most thickly-populated portion of the Municipality, and where the conditions of filth associated with overcrowding reach their climax, we are of opinion that no measures short of the compulsory widening of all the roads and lanes will be of any real benefit.

II. Public latrines.—To begin with, these are hopelessly deficient in number. As a consequence, we find in every *bustee* large numbers of the most inconceivably dilapidated and foul-smelling semi-public latrines for the use of the inhabitants. The majority of these are very rarely cleansed, and as a consequence there is a continuous sewage overflow and soakage into the ground. We, therefore, think that the Municipality should take the matter into their own hands and erect model public latrines in all these places, and by so doing a large number of disease-breeding centres would be done away with.

Of the public latrines that exist, none are really built on sound sanitary principles, to add to which certain of them, as, for instance, one in No. 93, Upper Circular Road, are in a hopelessly dilapidated condition; the masonry of the floors and seats broken up, and the ground on which they stand freely absorbing every possible degree of filth. The condition of these latrines, for the hours during which the water-supply is turned off, is something too horrible for description. The large gully pit into which the night-soil is supposed to fall is choked and filled up with enormous masses of solid excreta.

Efficient arrangements for continuous flushing are absolutely necessary. As things are, when the water is turned off, the stench is so horrible that it is quite enough to deter the public from visiting them, and one can perfectly understand how people should prefer to commit nuisance anywhere rather than visit such places.

Private latrines.—The simplest method of explaining the existing conditions of the private latrines will be to describe the type of privy which is usually met with. As a rule the seat with the seat aperture is from 2½ to 3½ feet above the ground. Immediately below this is the *gumla* chamber which receives the night-soil; sometimes this chamber opens directly on to the road-side; in other cases into a second chamber placed to one side, and sometimes into a long, narrow, tunnel-like gully, which is the only approach to it. The latrine itself is usually built of brick, the seat is coated with cement; but in the underlying chambers the brick-work is not faced with plaster, and the floors in a large number of instances are kutcha. The drop from the seat to the *gumlas* we have found to vary from 18 inches to 25 feet; so that the night-soil must necessarily be splashed all over the walls and floors. In many instances the *gumlas* are embedded in the floor and cannot be removed for cleaning; in many other cases there are no *gumlas* at all, or the vessels provided are so small that before long, in the course of any one day, the night-soil overflows the *gumlas*, and spreads out in a filthy pool covering the floor. From what we have seen, we do not believe that the latrines are cleaned every day in all parts, and in some that we observed, as, for instance, in Nos. 46 and 228, Mundal Street, the *gumlas*, the capacity of which must have been at least 10 gallons, had over-flowed, and stood in a pool of filth which reached half-way up its sides. The same thing was observed in No. 162, Ahiritolla Street, and in No. 6, Rajah's Lane. With regard to the cleaning of those places, we would point out that the doorways which open into the *gumla* chambers, or the passages leading to them, are so small that a man can

only just squeeze through (in one case we measured the opening to be 1 foot 3 inches × 2 feet 6 inches); where there is a passage from which the side chamber opens, the difficulties of cleaning are greatly increased owing to the cramped space and darkness in which the sweeper has to work. Where the *gumla* chambers open on to the street, the openings are so small that the vessels cannot be removed without spilling practically the whole of their contents on to the ground, and the result is that they never are removed and properly cleaned, but the contents are partially removed by an earthenware dipper, aided by the hands of the sweeper: even with this method a varying quantity of night-soil is left in the *gumla* or spilt on the floor. As a result of these facts, it is no wonder that the latrines are always foul smelling, and one cannot blame the sweeping staff, as the construction of these places is absolutely wrong. When we add to this the fact that it is latrines like these that are found in clusters in the most densely overcrowded *bustees*, and that in the majority of cases there is either no drainage, or the liquid discharges pass into the surface drains, we have a picture of insanitary conditions in an overcrowded *bustee* which would be hard to beat. The inspection of these privies throughout the city reveals a hopeless sameness of sanitary defects. We would recommend that all private privies be remodelled on a *standard plan*, which would admit of—

(*a*) Adequate ventilation of the *gumla* chamber.
(*b*) Sufficient space and light to give the sweeper a reasonable chance of cleaning the place.
(*c*) The replacement of unglazed *gumlas* by deep iron tarred receptacles.

Further, the sweeper staff maintained is numerically deficient. The table attached speaks for itself. As far as we can gather from the figures supplied by the Health Office, there is an average of 39 privies per mehter, but we are credibly informed by the inspecting staff that the average number of privies per mehter is about 40 or 50. Allowing eight working hours per diem, which no sweeper ever puts in, we have an average of about 12 minutes per man per latrine (*i.e.*, at 40 privies per sweeper). This time allowance includes the time occupied not only in cleaning privies, but in carrying night-soil to all places to which it is carried, and also that occupied in attendance on public latrines and night-soil depôts. Practically, therefore, each sweeper can scarcely have more than five minutes per latrine. Certainly he has not that in actual practice. Seeing that so many privies are in a tumble-down condition, or in more or less disrepair, and that of the scores inspected, not a single one was in anything approaching to a clean condition, it is quite apparent that whatever the cause, the staff do not overtake the work allotted them.

House-connections and house-drains.—In the course of our inspection we found that the condition of the house-drains and "down-pipes," which were intended to convey latrine and house sullage water, were in a deplorable condition. In a large number of cases the down-pipe was broken at from 5 to 15 feet from the ground, and the water, urine and liquid sewage from the houses were simply splashing on the ground, fouling the whole gully or lane, and soaking the walls of the houses, which in many cases were most thickly coated with filth. As examples, we might mention No. 39—3, Burtolla Street, and No. 169, Maniktola Street. The house-drains and gully traps were in a large number of instances in very bad repair and choked, and thus their contents (made up of washing from privies, urine, and kitchen-refuse) overflowed, and the state of the adjacent lanes is simply filthy. As instances of this condition of things, we would mention No. 11, Holoodhur Burdan Lane; No. 43, Ooriyapara Lane; 70, Baniatollah Street; 50, Boloram Dey's Street. In No. 33, Muktaram Babu's Street, occupied by Rai Amrita Nath Mitra Bahadur, the house-drain was *directly* connected with the public sewer; the kitchen drain was also *directly* connected with the sewer, which was untrapped and foul.

We would, therefore, recommended that more stringent regulations be brought in, forbidding the *direct* connection of house-pipes with sewers, and insisting on house-drains being kept in thorough repair.

III. *Surface drains.*—A large number of these in *bustees* and back streets are constructed of Raniganj half-pipes, laid on a bed of *khoa*. The majority of such drains show the joints open and more or less disconnected, the pipes broken, the bed of the drains sunken, and the drains more or less in disrepair. Owing to the alteration in level, they do not conduct as they ought to, often draining away from the gully pits to which they are intended to lead. In many instances the surface drains constructed of brick faced with cement or mortar, are wholly in disrepair. In a large number of instances the drains are hopelessly blocked with sullage matter, and are very frequently used as latrines or for the committing of nuisance. As examples of premises with bad surface drains, we would quote the following:—73, Grey Street; 156, Upper Circular Road, belonging to Maharaj Mahendra Krishta Dey Bahadur; 16, Gobin Banerji's Lane (zamindar, Kali Baral); 13, Rajendra Nath's Lane (owner, Atal Kumar Sen). Many other instances can be quoted. In places as in 66, Sukea Street, there are clusters of privies draining directly into surface drains, the gully pits being a long way removed.

In the *bustees* in Jorabagan, Russick Lall Ghose's Lane, Sukea Street, Gumgarpara, Chandney Chowk, we have noted that the surface drains in many cases run down gullies which are mostly only two or three feet wide. These drains are choked, and nests of the most filthy latrines situated right within the courtyards of houses discharge into them. In Chandney Chowk we found open urinals actually built over the surface drains, and these urinals were being used as latrines. It would be quite wearisome to multiply examples

sufficiently to illustrate any considerable proportion of what we have actually observed, and it does not appear to us that any municipal bye-law touching these conditions is ever enforced—if, indeed, such a bye-law exists.

IV. *Condition and cleansing of roads.*—This is entirely unsatisfactory for the following reasons:—

(1) We are credibly informed by the Sanitary Inspectors, and indeed have seen for ourselves, that there is an utter want of system in the way in which house-refuse is put out at all, and at any hours. There is no municipal bye-law or ruling regulating the putting out of house-refuse. As a result, scavenging carts may take what they find, but the streets are never cleaned.

We would recommend—

That definite hours be appointed for the putting out of house rubbish, viz., from 1st April to 31st October all rubbish be put out by 6 A.M., in the morning and by 4 P.M. in the afternoon, and from 1st November to 31st March by 7 A.M, and 3 P.M.; that no rubbish be put out between the hours of 6 A.M and 4 P.M. in the hot weather, and nothing should be put out between 7 A.M. and 3 P.M. in the cold weather. Any occupants of holdings infringing this rule should be severely punished. The scavenging staff (carts and sweepers) should be increased to meet requirements. It would be of no use recommending that rubbish be put out between certain hours, as, for instance, between, say, 7 and 9 A.M., for then, unless a cart started on its rounds at 9 A.M, it may miss anything at any point in the earlier portion of its round.

(2) Scavenging carts do not always take up what they find put out.

(3) Scavenging staff is absolutely inadequate. In support of this statement we may quote the following figures showing work done by scavenging coolies. As examples, we would quote that—

In ward I, 15,109 square feet of road area per cooly is allotted.

„	II, 8,606	„	„	„
„	III, 14,525	„	„	„
„	IV, 11,439	„	„	„
„	V, 8,237	„	„	„
„	VI, 11,558	„	„	„

This would allow a considerable length of road for each cooly; and having regard to the traffic, the road areas per cooly are not so easy to manage as it may at first sight appear.

(4) The surface drains along roadsides are entirely insufficiently flushed. The following table shows the number of *bhistis* allotted per ward. As example, we would quote that—

In Ward No.	I	there are	8	*bhistis*	to	409	acres,	or 1 to	$51\frac{1}{8}$ acres.
„ „	II	„	9	„		217	„	1 to	29 „
„ „	III	„	9	„		403	„	1 to	$44\frac{7}{9}$ „
„ „	IV	„	8	„		320	„	1 to	40 „
„ „	V	„	11	„		243	„	1 to	$22\frac{1}{11}$ „
„ „	VI	„	10	„		262	„	1 to	$26\frac{1}{5}$ „

Having regard to the necessity for flushing which exists, especially in the dry season, the present staff of *bhistis* appears ridiculous.

V. *Sanitary condition of compounds and courtyards of houses.*—Again, we have to state that throughout our inspection we found the scavenging of courtyards and compounds insufficient, and in many cases entirely neglected. We would draw special attention to the condition of courtyards and houses in Marwaritolla.

As example, we think it would be as well to describe the state of things obtaining at No. 46, Burtolla Street. The premises consist of a rectangular courtyard surrounded by dwelling-rooms on the ground-floors, and on two-storeys above. The entrance to the courtyard is 3 feet wide, opening into a passage measuring 5 × 9 × 9 feet leading into the courtyard proper, and crowded with bricks and tiles and in one corner a collection of filthy rubbish, 4 feet square. The courtyard is 32 feet long by 11 feet broad, of which 6 × 3 feet are taken up by the staircase leading to the upper storeys, and under which we found a collection of dirty rags. In this corner was also a tap and sink. In the opposite corner of the courtyard were two privies, discharging by a broken pipe, 3 feet from the ground, to an open drain crossing the width of the courtyard to the sink just mentioned. The wall under the privy pipe was thickly coated with latrine discharges, and the drain was partially blocked with filth. The walls in the neighbourhood of these privies were damp and splashed with filth up to a height of 3 feet. The pucka drain going down the length of the courtyard is not clean, and was blocked at one end by a collection of old rags and bricks, and a considerable portion of the pucka floor of the courtyard (which was strewn with kitchen-refuse) was in bad disrepair. In the chamber to the left, and opening directly into the yard are the two privies, pitch dark and absolutely without ventilation. It was necessary for us to get a light to see into them, even in the middle of the day. The drop from the privy seat to the *gumla* chamber is 3 feet; to get at the inner *gumla* the sweeper has to reach over across the first one, and when we state that the entrance door to the outer chamber measures 1 × 3 by 2 × 6 inches, it is obvious that

it would be quite ridiculous to expect adequate cleansing, specially when we add the fact that the *gumla* chamber was pitch dark inside and swarming with cockroaches The floor of these chambers was about an inch deep in soft sewage mud. There are three living rooms on this ground-floor, measuring 6 × 8 × 8; they are pitch dark and quite unventilated. On the first floor are six dwelling-rooms, of which only the two front rooms are decently ventilated and lighted; a wooden stair leads to the second floor, under which we found an accumulation of rags, brooms, and filth of all kinds; the passage on the second floor is not wide enough to enable two people to walk abreast, and every corner is stuffed with rags and filth of all descriptions.

The next house, No. 45, Burtolla Street, is built exactly on the same plan. The entrance door, 4 feet 6 inches wide, opens into a passage 12 feet long and having a shop on either side of, and communicating with, it. The central courtyard is 45 feet long, 16 feet wide, but of this a space of 5 feet all round is taken up by a verandah and its drain. Leading off the verandah are 12 rooms, only two of which have any ventilation, except that obtained by the doorways opening on to the verandah. The courtyard floor is generally in very bad repair, but at the entrance a space of about 20 square feet is completely broken up. There are eight house-pipes opening into the courtyard drain, all of which carry house sullage water from the upper storeys. Three of these are broken, and their contents soak into the walls. There are four staircases leading to the upper dwelling rooms, and both stairs and rooms are black with filth. We are informed by certain of the occupants that 150 people live in the premises, whereas we are of opinion that there is only room for 40 or 50 people at the outside. There are two privy seats on the first floor, and the drop from the seat apertures to the *gumlas* below we found to be 15 feet. These two houses (45 and 46, Burtolla Street) are separated from each other by one of the most filthy and insanitary gullies it has ever fallen to us to see in India, and which in the years of our experience it has ever been our misfortune to come across in any municipality in Bengal. The entrance to this gully is a dark, unsightly aperture, measuring 3 feet by 5½ feet, to which one was introduced over a foul-smelling heap of rubbish. For about 6 feet or so we found it 4 feet wide, and for the rest of its length it measured about 2 feet across, till it opened out into the *gumla* chamber. Its length was in all about 40 feet, but we did not dare to measure it, for its hideous condition was too much even for the strongest nerves. Along its floor ran a drain about 10 inches wide and 8 inches deep, made of brick unfaced with plaster, and its bottom laid in plates of what may have been stone or tiles, but which was broken up and so rotten with the filth of ages that its structure was not easy to pronounce upon, for its joints were all open and sewage soaking through. For about 20 feet the gully was open above, and into it poured the sullage washings from the upper storeys of both houses, 46 and 45. Eight broken down-pipes discharged their filth into it, their mouths opening some near the drain and some at perhaps 10 feet up, and one perhaps 15 feet up. The side walls were splashed as high as a man can reach, and thick and black with indescribable filth. The drain itself was in a condition which must be seen to be appreciated; full 5 inches deep in the foulest sewage direct from the pipes and the latrine beyond, and blocked by a bund of sewage mud deliberately built up at its near end, where a miscellaneous collection of night-soil vessels in various stages of filth were stored. The latrine itself was the central feature of the locality, and in a condition which would totally defy all description. Imagine a place about 6 feet square—we did not dare to measure, or indeed to approach it—with two *gumlas* containing about 30 gallons of night-soil semi-fluid, with the fermentation of putrefaction, and its floor strewn deeply with the same disgusting matter, and add to this the splashes of the night-soil all over the *gumlas* and walls up to the height of a man's waist, or nearly so, and you have a faint picture of a condition which beats all one has had the misfortune to see so far. Complete investigation, even if any one may have had the temerity to attempt it, was rendered unsafe and impossible by the fearful thick overpowering stench which emanated from the *gumla* chamber at the end of the gully. The air from this pervades the atmosphere in No. 46, which is separated from it by a wall 8 or 9 feet high, its upper storeys overlooking the open gully. This gully, together with the two houses on its sides, makes up a sanitary picture of a condition not by any means uncommon in Calcutta, especially in this quarter, and of a state of things that any community may indeed be ashamed of. We need not therefore multiply harrowing descriptions, and indeed we have no wish to make this report more full of disgusting detail than need be necessary to convince people that the conditions which have come under our notice are, to say the least of it, perilous to the public health, while at the same time their existence shows scandalous neglect and reflects the very gravest discredit on those responsible.

VI.—Storage of Rag and Grain Depôts.

Rag Depôts.—We inspected a rag depôt at 156 and 157, Bow Bazar. The depôt shed is a portion of the Bow Bazar Market shed, in which meat, fish and vegetables are sold. The rag depôt is directly to the north of the meat bazar, and owing to its proximity, its being in the direct line of the cold weather prevailing winds, we consider its nearness to the food stores to be very undesirable. The rags collected here are of the filthiest description, consisting of bits of old bedding, *razais*, personal apparel, &c., which are picked up in many cases (as we saw with our own eyes) from the rubbish heaps on the roadsides: these rags are sorted into classes. We think that the existence of such a place adjoining and having direct connection with a meat and fish market is certainly most undesirable, and would advise its being closed at once or removed.

Grain stores.—Grain stores in the main are satisfactory, although we consider that better ventilation should be provided in those godowns where rice-cleaning is carried on.

VII.—State of Stables and Cowsheds.

The condition of the cowsheds in Calcutta is a disgrace to any civilized community. They are to be found in nearly every *bustee* in the municipal area, but it would best serve our purpose to note a few instances, *e.g.*, Rajah Bagan *bustee* cowshed; No. 60, Amherst Street *bustee*, and 67, Ram Kanta Bose's Street. To commence with, these places are often found in the most thickly-populated part of the *bustee*. The sheds in which the cows live are generally made of wattle and daub *laped* with cowdung, and in many instances with brick or wooden floors. The sheds are very dark and very badly ventilated, and the floors are covered as thickly as possible with cowdung and urine and stable-refuse of all sorts which soaks into the floor and makes it impossible for the cattle to keep free from disease. Again, the drains in the sheds are, in many instances, faced with wood, which is broken and rotten. The cattle, which ought to have 650 cubic feet of air each, are so densely packed that they can just move and stand. In *bustee* No. 18, Fakir Chand Mitra's Street, we found that the space per cow is as low as 120 cubic feet. The drains for the sheds lead to outside pucka reservoirs, which are usually too small, as in nearly every instance we found the liquid cowdung overflowing into the yard in close proximity to the shallow wells, which are to be found in connection with every cowshed. In two instances in Ram Kanto Bose's Street, No. 10 and No. 67, *the liquid sewage was seen to be flowing into the well.* The surface drains in proximity to the cowsheds are often filled up with liquid sewage from the sheds. In Harke Bagan, 83, Grey Street, a surface drain was brimful of sewage of the consistency of thin mortar for some 40 yards of its course, and other drains opening into this one were also full for varying distances, and the gully pit at the end quite blocked. The water in the wells in every cowshed is green with filth, and is given to the cattle for their food and their drink, and we believe that the dairy utensils are also washed in this water. In 67, Ram Kanto Ghose's Street, the milking vessels had cowdung adhering to their inner surfaces, and these dishes had only just been used for milking. In case our description may be taken as being too general, we wish clearly to state that this description applies in the main to almost every cowshed inspected. Seeing that there is an abundant supply of filtered water, these wells, we think, should be closed.

Stable.—In Chowringhee Lane there is a stable situated between No. 10 and Maharaja of Rangpur's house, and which is provided with a drain and gully pit; the drain is capable of conducting nothing, and the gully pit is covered with stable-refuse, and all the filthy washings from the stable are thrown into the roadside drain. In Kahai Lal and Ruba Lal's stables, off Armenian Street, the stablemen's sleeping quarters are directly above the horses' stalls; the stable floor is not paved, and is undrained. These are simply types of what exist. The general condition of *ticca gharri* stables is not far removed from that of the cowsheds.

In this connection we might call attention to the condition of some of the hackney-carriage stands: for instance, those at the corner of Wellesley Square and in Wellesley Place, where the *gharri* horses remain for hours on stands, which are unpaved, so that adequate cleansing is impossible. The question of what may be done with the cowsheds is a difficult one.

It is impossible under present circumstances to clean them or to keep them clean. Building model cowsheds involves very great expense, and the evil will in all probability only repeat itself in a short time. The only alternative appears to be to recommend the entire removal of cows and cowsheds outside urban areas. Milk can be readily brought in and sold as required.

VIII. *Condition of the Circular Canal.*—Between Bagbazar Bridge and Maniktola Bridge we found four sewers discharging into the canal. The canal water, we understand, is largely consumed.

IX. *State of tanks.*—Generally and undeniably filthy. In the flour-mills belonging to Hem Chunder Mukerji and Benoy Krishna Banerji, the water from two fouled tanks is used for washing the wheat. Around the edges of these two tanks are cowsheds built up close to them and with the drainage passing directly into them. Buffaloes were tied on the edges, and were wallowing in the water; people were washing themselves and their clothes there, and we have no doubt that this water was also used for purposes "domestic" and other which we shall not here specify, and yet this same water was pumped up and used for "cleaning" the wheat which is ground into flour for bread for the use of the enlightened citizens of Calcutta. Seeing that there is an abundant supply of good filtered water, we cannot understand why such practices are either indulged in or permitted, and such a wholesale contamination of food-supply as here undoubtedly is deliberately perpetrated is worthy not only of the severest condemnation, but of the most deterrent punishment.

Adequacy of water-supply.—For drinking purposes it appears to be sufficient, but no data have been supplied to us.

X. *Strength and working of the Conservancy establishment.*—For strength, *vide* remarks above and table appended. Regarding working, it is our opinion that inspection is neither sufficiently frequent, not sufficiently thorough; the condition of private latrines and gullies, and the testimony and complaints of people and *bustees*, appear to us to be sufficient evidence on this point.

XI. *Facts indicating the necessity of a special Building Act and the opening out of new streets.*—The facts which we have quoted appear to us to furnish sufficient evidence for the necessity of opening up new roads in the more crowded parts, and that altogether the conditions with regard to overcrowding should be radically altered, so as to allow of freer

perflation and of ventilation and access of light. In this connection we would put forward the following examples:—

(1) At 17-1, Chasa Dhobapara Lane, one Sasi Bhusun Kundu is erecting a four-storied house in a narrow lane, 12 feet wide, although this is against all regulations.

(2) In Mechua Bazar, *bustees* need to be opened up by the construction of a road through them.

(3) In Said Bagan gully we have an example of a long narrow passage about 5 feet wide, with high houses on each side, blocking out all sunlight.

(4) The condition of *bustees* in Russick Lall Ghose's Lane, Sukea Street, Jorabagan Street, Marwaritolla, the condition of the gully at 17, Durpo Narayan Tagore's Street (the last of which is intolerably dark, confined, and hopelessly devoid of ventilation), and in a more general way of most of the *bustees* examined, is such that no staff could possibly clean them, much less keep them clean, and that nothing short of the most radical measures possible can ever suffice to effect any real sanitary improvement.

XII. In addition to the above, certain matters have come to our knowledge, and for the present we would bring the following to the notice of the Board for such action as they may think necessary:—

(1) Municipal cases are tried by Honorary Magistrates, and the punishments awarded do not appear to be deterrent.

(2) The committing of nuisance in drains is so frequent that it appears to us that no definite or sufficient measures are taken to prevent it. In this connection we would point out that municipal officials complain that they have no police powers and cannot arrest offenders.

(3) We are credibly informed that, owing to its present constitution, the Health Department appears to have no control over *bustee* and roadside drains, so that reports concerning the condition of the latter are not dealt with or taken in hand as soon as they ought to be.

(4) We notice that there is a tendency to build over land newly made by filling up tanks in the centres of crowded *bustees*, *e.g.*, in the vicinity of Sukea Street.

In conclusion, our acknowledgments are due to the Health Officer and his staff for the assistance rendered in the work of inspection.

Table showing the distribution of Conservancy staff, Wards I to XXV, Calcutta Municipality.

(Supplied by the Health Officer's Department.)

Ward number.	Total number of peons.	Total number of coolies.	Total number of mehters.	Total number of domes.	Total number of bhistis.	Total number of hired carts.	Wagon platform sarkar.	Trade refuse, hired bullocks, or liquid manure carts.	Gowkhana double carts.	Gowkhana single carts.	Gowkhana dome carts.	Busti sardar.	Busti tindal.	Cooper.	Road area, exclusive of sewer ditches.	Length of sewer ditches in feet.	Number of privies.	Number of free latrines.	Number of jamadari latrines.	Number of night-soil depôts.	Number of urinals.	Night-soil bullocks and carts.	Night-soil mates.	Number of boys for gully pits.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	6	103	127	3	8	11	1	5	...	21	1	1	1	...	1,556,311	22,490	4,124	3	...	3	3	...	3	4
2	6	92	100	2	9	11	...	...	2	29	1	1	1	...	791,799	9,940	2,348	4	1	...	4	1	3	3
3	7	93	125	3	9	15	...	7	...	22	1	1	1	...	1,350,884	20,153	3,998	4	2	3	4	...	3	3
4	6	97	101	3	8	14	1	5	...	14	1	1	1	1	1,109,670	19,786	3,721	1	2	1	2	...	4	3
5	7	130	123	2	11	16	...	...	11	46	1	1	1	...	1,070,888	9,212	2,645	5	4	2	9	...	5	4
6	5	92	128	2	10	12	...	3	1	27	1	1	1	...	1,063,389	28,554	3,642	3	3	1	5	...	3	4

Ward number.	Number of peons.	Number of sardars.	Number of tindals.	Number of mates.	Number of coolies.	Number of mehters.	Number of domes.	Number of bhistis.	Number of gully-pit boys.	Number of coopers.	Number of hired carts.	Number of liquid manure carts.	Number of gowkhana large carts.	Number of gowkhana small carts.	Number of dome carts.	Number of privies.	Number of night-soil depôts.	Number of free latrines.	Number of jamadari latrines.	Number of urinals.	Number of night-soil carts.	Road area, exclusive of sewer ditches.	Length of sewer ditches in feet.	Wagon platform sarkar.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
7	6	1	1	4	121	82	3	16	9	...	13	2	6	31	1	1,135	1	1	3	13	...	1,141,883	2,918	...
8	7	1	1	3	115	122	3	14	4	...	12	...	4	27	2	2,674	4	7	1	11	...	1,159,442	12,818	...
9	9	2	1	4	146	127	4	15	5	...	21	5	2	24	...	4,120	2	1	2	3	3	1,475,372	15,896	1
10	5	1	1	3	72	67	3	7	2	...	6	...	3	16	...	1,404	3	3	3	2	...	594,758	6,124	...
11	6	1	1	2	104	76	1	6	2	...	6	2	2	14	1	2,072	1	1	...	4	...	842,838	10,964	1
12	5	1	...	1	63	9	4	9	3	...	8	...	7	18	...	257	...	...	...	5	...	932,861	...	...
13	6	...	1	3	95	59	2	11	3	...	13	2	7	20	...	1,301	2	4	1	7	...	979,675	6,360	...
14	5	1	1	3	69	75	2	10	4	...	8	2	2	14	1	2,220	2	2	3	2	...	918,504	13,438	...
15	5	...	1	2	67	39	1	6	3	...	4	...	1	11	...	1,007	1	1	...	2	...	665,847	6,686	1
16	4	...	...	1	35	5	1	4	3	...	2	...	4	14	...	289	...	...	...	1	...	883,283	...	...
17	4	...	1	1	37	13	1	4	3	...	2	1	1	8	...	305	...	...	...	1	...	835,537	...	1
18	3	...	...	1	43	25	1	4	3	...	4	1	4	2	...	327	1	2	...	1	...	448,104	...	...

Table showing the distribution of Conservancy staff, Wards I to XXV, Calcutta Municipality—concluded.

(Supplied by the Health Officer's Department—*concluded*).

Ward number.	Night-soil sarkars.	Peons.	Privy examiners.	Mates.	Mehters.	Trenching sardars.	Trenching coolies.	Coolies.	Domes.	Tallyman.	Supervisor.	Time-keepers.	Lamp-trimmer.	Gully pit boys.	Hired carts—conservancy and town-refuse.	Gowkhana small carts.	Night-soil carts.	Sullage carts.	Night-soil depôts.	Dome carts.	Tindal.	Blacksmith.	Boiler man.	Stokers.	Topmen.	Ashmen.	Durwan.	Number of privies.	Number of urinals.	Number of free latrines.	Number of jamadari latrines.	Mileage of roads.	Length of drains.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
																																M. Fs. Ft.	M. Fs. Ft.
19	1	2	1	6	114	...	...	85	1	1	...	...	...	...	5	35	2	8	1	1	...	...	...	...	...	...	1	3,328	...	...	...	15 3 286	30 4 378
20	1	2	1	5	95	1	10	45	1	...	...	...	...	...	2	18	4	9	...	1	...	...	...	...	...	...	...	2,357	...	...	4	14 1 600	34 6 560
21	1	2	1	4	96	...	...	41	1	...	...	...	...	...	2	26	...	9	...	1	...	...	...	...	...	...	...	2,889	...	...	1	32 1 165	63 2 595
22	1	2	1	9	186	1	23	56	1	1	...	...	...	...	4	39	6	8	...	1	...	...	...	...	...	...	...	5,839	1	3	4	20 1 253	36 6 184
23	1	2	1	8	66	...	...	40	1	...	...	...	...	...	32	...	8	6	...	1	...	...	...	...	...	...	...	1,548	...	...	...	16 4 53	28 0 283
24	1	2	1	2	72	...	2	42	1	...	...	...	...	...	21	...	...	8	1	1	...	...	...	...	...	...	...	2,177	...	1	1	15 6 17	31 4 609
25	1	2	1	4	110	...	...	40	1	...	...	...	...	...	27	...	30	7	...	1	...	...	...	...	...	...	...	2,509	...	1	1	11 5 459	21 3 229
Budge-Budge depôt.	...	2	...	...	6	...	...	...	...	...	1	2	1	6	..	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	.....	.....
Goragatcha Incineration.	...	...	...	...	...	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	1	1	1	6	8	6	1	...	...	...	...	.....	.....

A Report on the Sanitation of Bhawanipur (Ward 22), by Surgeon-Captain H. W. Pilgrim, M.B., I.M.S.

Bhawanipur nearly corresponds with the area included in Ward No. 22, the boundaries of which are as follows:—North, the Lower Circular Road; East, Lansdowne Road, Chuckerbere Lane, Beltollah Road; South, Hazrah Road, Nepal Chunder Bhattacharjee's 1st Lane; West, Tolly's Nala. This area is divided into an eastern and western half by the Russa Road, which runs straight through it from north to south.

I. Condition and cleansing of roads.—The surface of main and secondary roads is in good repair for the most part, and also kept clean, and contrasts with the condition of the drains alongside of them, which are filthy and malodorous in the extreme. The passages through rows or series of huts or spaces where the latter are built, nearly back to back, are generally dirty and obstructed by heaps of rubbish, which add to the difficulties of access for cleaning. While the condition of the main and secondary roads as regards repair and cleanliness is satisfactory, their utility as conduits for the admission of air and sunlight is seriously reduced by (1) the fact that the general direction of the main roads (excepting Russa Road) is from east to west, and not in the direction of the prevailing wind from north to south; (2) many of the main roads, and all of the secondary ones, are narrow and tortuous beyond conception, having for the most part apparently sprung up haphazard, as in the long course of time new huts and houses have been added, built in accordance with individual caprice, forming extensions of *bustees* and pucka habitations intersected by spaces called roads, lanes, or passages, according to their varying width; the winding character of these roads, by creating increased resistance to the passage, and frequently breaking the current of air, interferes seriously with perflation.

II. Surface drains.—Excepting a deep sewer drain, running from Lower Circular Road through Gunga Ram *bustee* to Elgin Road, all the drains of this ward are open surface drains, and are of three kinds—(1) The great majority, altogether kutcha, were excavations of the earth. (2) A few partially pucka, *i.e.*, sides of brick, but floor of earth. (3) A still smaller number altogether pucka. The general direction of the outfall of the eastern half of this ward is towards Ballygunge, and thence to Dhappa, but the drainage in this direction is in a fair number of cases intercepted by, and received into, a pucka drain deeply placed, which runs northwards from Puddapukur Road to the Elgin Road, where it discharges itself into an underground sewer. In the western half the general direction of the outfall is towards the west, the great majority ending in Tolly's Nala; while both in the eastern and western half a certain number of the drains discharge their contents into some of the numerous tanks that honeycomb the ward.

Contents of these surface drains are—(1) Water from the mains, (2) washings from cook-houses, (3) ablution water containing fœcal matter, (4) urine, (5) a small amount of solid refuse. They are in most places clogged by the silting up of a shiny compost of mud and organic matter, to which more or less cohesion is given by the presence of a dark green mossy deposit on the surface, over which the filthy water either stagnates, or sluggishly steals along on the way to the outfall. The emanations from these drains are horribly offensive and the subject of loud complaint on all sides. One reason why the roads are clean, but the drains alongside foul, becomes apparent, when it is stated that the roads are cleaned by the Conservancy Department, while the drains are under the care of the Road Department, which is supposed to clean out these drains by merely removing the filth and putting it on the sides of the road for the carts of the Conservancy Department to remove; this leads to

frequent bickerings between the two departments. The Road Department recognising their utter inability, through insufficiency of establishment, to cope with these drains, seems to give what attention they can to the pucka drains, and to ignore their duties in the direction of cleansing and maintaining a proper level in the kutcha drains. The cleansing of the roads and surface drains should be under one and the same supervising head, preferably the conservancy inspector, who would be able to force the various classes of carts and coolies to *co-operate* in their work, and so obtain more satisfactory results; those coolies of the Road Department that are said to be specially employed in cleansing the drains should be handed over to the Conservancy Department, and the inspector made responsible for cleaning both drains and roads. I cannot too strongly urge this transference of establishment and responsibilty, for without it the sanitary condition of the drains will always be more or less unsatisfactory, while much improvement in the condition of these drains can be effected at once by cleaning them out, and maintaining proper levels, with an establishment of coolies whose number must be very considerably increased. It is obvious that the only real solution of this difficulty is a system of underground and surface drains arranged separately, so that the surface drains will only contain storm and waste water, to be discharged into the natural outfall, viz., Tolly's Nala, or else under the influence of sentiment, expensively diverted, so as to discharge into some other outfall.

III. Condition of public and house latrines. (*1*) *Public.*—These are again subdivided into (*a*) Municipal or free, (*b*) jamadari or those licensed and kept by mehters. Of the three Municipal latrines, I found two of the Donaldson pattern near Kalighat in excellent order and evidently much appreciated; the third one, situated in the Kassia Bagan *bustee* (quite close to Lower Circular Road), is very filthy and requires extensive repairs; this should be done at once, as the latrine discharges its contents into a deep sewer leading into Lower Circular Road, and could be more easily served and kept clean if properly repaired.

Of the four jamadari latrines, I inspected three, all made of inferior bricks and crumbling to pieces, and not kept clean; but one in particular I call attention to, not only because it is the worst in every respect, but because it is contiguous to a large market in Jadu Babu's Bazar (off Russa Road), where fish, vegetables, etc., are displayed on the ground for sale in large quantities; the latrine should be either at once put into good repair and the management changed, or, better still, demolished and replaced by a Donaldson's latrine which, apart from requirements of those coming to market, would be much appreciated in a densely populated quarter like this.

2. House latrines either pucka or kutcha.—As pucka are usually connected with houses, sometimes quite detached, and consists of a pucka compartment on one side of the house, containing a *gumla,* while from the platform just above ablution water and urine passes by a pipe or pucka channel to the surface drain without. The *gumlas* as a rule were attended to, but the mehters apparently make no attempt to clean the small compartments in which these *gumlas* rest, which are shut off from air and sunshine by trap-doors; the floors of these compartments are usually very offensive, fouled as they are by fluid droppings, and often by solid excrement. The construction of these latrines is so faulty, and they are often so inaccessible (necessitating crawling on "all fours"), that the mehter staff cannot be altogether blamed for their insanitary state; moreover, they harbour snakes during the rains, which add to their difficulties. The ablution water usually pours into the surface drains close by, and is largely responsible for the foul condition of the drains; the privy washing, however, sometimes, instead of discharging into the drain, discharges merely on the ground within the courtyard. When these pucka privies are quite detached from the houses, the water often discharges on the earth, forming an unwholesome pool.

(*b*) Kutcha prives in connection with huts in *bustees* are unspeakably filthy; in this ward they are usually within the hut on one side, and the *jhap* or spilt bamboo forming the wall of the house becomes permeated and fouled by both sorts of excrement. The floor on which the *gumla* rests is often a part of the floor of the room they live in, and is almost invariably filthy and offensive in the extreme; the ablution water, etc., from such privies trickles into surface drains, where such exist, or more often forms a channel for itself, and is absorbed in the earth, or, as frequently happens where such huts are situated on the margin of tanks, the channel leads direct into the tank, *e.g.*, in some of the huts bordering the tank in Nikaripara *bustee*, close to Pora Bazar (east of General Hospital). The insanitary state of these latrines is often enhanced by their opening into the very narrow passages that exist between rows of huts, the passage being often only a drain, which in the rains must seriously add to the difficulties of the mehters in getting at these *gumlas*, to say nothing of the fact that air and sunshine is for the most part excluded from such passages. In some places one finds a cluster of some three or four of these privies quite detached from the huts, and as the washings merely soak into the earth around, the nuisance is greatly intensified. Such a cluster can be seen in the Dhobapara bustee (close to a large tank where Puddapukur Road leads into Chuckerber Lane), though the privies in this *bustee* are for the most part pucka, but badly designed, and the washings soak into the soil, producing a nuisance about which the neighbouring residents complained loudly.

IV. Sanitary condition of compounds and courtyards of houses.—In the eastern half of this ward, which is not so thickly populated, the condition of courtyards was surprisingly clean, but outside the houses, and still worse in the narrow spaces between huts, heaps of filth and rubbish are accumulated. I came across one corrugated iron receptacle for rubbish, which seemed to be much appreciated. In the eastern half, and indeed in most parts of this ward, the people's houses were clean inside. In the *bustees* and in the spaces between huts it is

impossible for the refuse carts to enter, and much improvement at no great outlay could be effected by placing receptacles for rubbish in *bustees* at certain fixed points where they could be removed by the carts. The western half of the ward is more densely populated, and the interior of houses and courtyards are not so clean, while in certain *bustees*, such as Goaltooli *bustee* (immediately to the south of the General Hospital), the houses and courtyards are very filthy, contain all sorts of evil-smelling accumulations; this condition of things was also found in adjoining *bustees*, such as Badhpara, Kansaripara, and to a lesser extent in other parts of the western half.

V. Overcrowding of houses and bustees.—In the eastern half this was well marked along areas conterminous with public streets, and in certain portions of the interior; still, compared with Watgunge and Kidderpore, this half of the ward could not be described as overcrowded; nor did the individual houses appear overcrowded, having regard to their construction. The western half was decidedly overcrowded, both with houses and, as far as one could judge, with people; Goaltooli *bustee* in particular is densely packed with huts, so, too, in Bodhpara and Jultoongee *bustees*, and as one approaches the purlieus of Kalighat.

VI. State of tanks used for washing and bathing.—There are 823 tanks in this ward, and none reserved or protected in any way: some emitting such horribly offensive odours, that even the people themselves have by common consent ceased to make use of them for any purpose. Many tanks that are in use for bathing, washing of clothes, and raw food are also offensive in a less degree; but the colour and smell of the water are usually sufficient to condemn it for domestic use. These tanks must be responsible for a considerable part of the sickness and mortality of the people. They have been practically proved to be casually associated with outbreaks of cholera, and must greatly predispose to phthisis and rheumatism, both diseases which prevail extensively amongst natives in Calcutta. This ward has an evil reputation for cholera, and the importance of having the majority of these tanks filled up as soon as possible is obvious. The subject is so important that I think it worth mentioning certain difficulties in connection with tank-filling. I am informed that people having money, with a view to repudiating ownership in a tank when called on to fill it up, or drain it out, often assign them to relatives who have no money, so that no proceedings can be taken out by the Municipality, who have therefore usually to bear the cost of any action taken with regard to tanks. Certain provisions should be made to restrict building on the sites of filled-up tanks: there is, I am aware, some rule prohibiting people to build on such sites till after the lapse of a certain period; but in many cases it would be unwise to allow the erections of buildings at any time on such sites, for these tank spaces, bad as they are when containing polluted water, at least serve as reservoirs of air, put a limit on excessive overcrowding, and reduce the evil effects of such overcrowding. Unless regulations are made, this will certainly take place, because buildings will be erected if only to partially defray the cost of filling; but in some cases, where factories are near and cinders available at a cheap rate (*e.g.*, in Watgunge), I obtained figures which show that tank-filling, with subsequent erection of huts, would be distinctly profitable.

VII. Wells.—There are 493 in this ward, and are usually found in courtyards. They have generally a pucka ring of masonry at the top, projecting above the surface of the ground, so as to exclude surface washings, but the interior of these wells is only protected from the percolation of surrounding impurities by "pars" or rings of tile, which are broken and detached over large areas. These wells are often situated quite close to privies or surface drains containing fœcal washings: this was notably so in Goaltooli *bustee*, where in some instances a well in a privy with most filthy surroundings were absolutely in juxtaposition. The water from these wells I found to be invariably clean and free from smell of any kind, and there must therefore be a great temptation to use it. I regard these wells as a great source of danger to ignorant people. The analysis and examination of many samples of well water, made at the laboratory of the Health Department, give the usual indications of organic matter in excess, and in most of the samples commas have been found. These wells are of course not deep in Calcutta, and as they have a small diameter they could be filled up for a very moderate outlay.

VIII. State of stables, cow-sheds, &c.—In this ward all the stables are unlicensed, and have therefore no pucca floors or proper arrangements for drainage, and in the rains must be in a very insanitary state. A few proprietors only have been prosecuted, and these have been given time for alterations; but bad as these are, they do not seem to endanger the public health in the same degree as do the *cowsheds*, and the arrangements generally for keeping cows and buffaloes. Only some two or three of the cowsheds are licensed, and some few have been prosecuted and given time either to go elsewhere or make better arrangements. Cows and buffaloes are kept horribly crowded together in low sheds, the space allotted to each being much the minimum square area occupied by the body and legs of the animal. This is well seen where some buffaloes are kept in Gunga Ram *bustee*, and also to a lower extent in Gosain *bustee*, to the east of the General Hospital; but throughout the ward one comes across, here and there, cows huddled together in the interior of houses, and rooms leading off houses, in most cases the surroundings were filthy and unsatisfactory. In Gunga Ram *bustee* (close to the Lower Circular Road) I found pigs were being kept in small pens that are extremely filthy; also in some other parts of the ward, *e.g.*, in the western half, between the Kalighat Road and the Strand

IX. Storage of grain, rag depôts, second-hand clothes shops, markets, &c.—Grain is only kept in small quantities in retail shops, the conditions of which do not call for special comment. I could hear of no rag depôts or second-hand clothes shops.

The *markets* are all private. The one in Jadu Babu's bazar requires repairs; in the corner of this market is a urinal, but I found it was being used for both purposes; separated from this market only by a wall is the jamadari latrine previously referred to—if this latrine were demolished and a good one erected in its place, with easy communication from the market, the latter would be much improved.

X. Condition of Tolly's Nala.—Apart from sentiment, the views on this question seem clear. The nala is polluted by (1) the excrement of a large floating population, (2) the surface drainage containing privy washings, etc., from large areas; there can be no doubt about its pollution: and various analyses of this water made by the Health Department prove that it is unfit for drinking. It has, however, been polluted for ages, and it is only that the degree of pollution has somewhat increased recently, owing to certain drains having been made pucka, and larger areas drained, that the subject has attracted any notice at all. In the course of my inspection I made numerous enquiries amongst the people as to the extent to which the water of Tolly's Nala is used for drinking purposes. On the answers received I can only make the following statements. There is no doubt this water is largely used on ceremonial occasions, but the majority seemed to think that not more than about 4 per cent. of the population *always* used it for drinking purposes. Brahmins, however, invariably said that a much larger proportion than that were in the habit of using it on all occasions. In the scheme of drainage for the suburbs, it seems to me that this element of pollution will be entirely removed, for the surface drains will then only contain storm and waste water, all sullage being removed by the underground system of drains. Tolly's Nala would seem to be the natural outfall for the surface drainage of this area, and it seems quite unnecessary to make any alteration in the proposed scheme in the way of directing at considerable expense this harmless storm-water.

XI. Strength and working of Conservancy Establishment.—The strength of the Conservancy Establishment of this ward is given in a schedule at the end of this report, and also that of the Road Department, since the latter is at present responsible for the cleansing of the drains. The unsatisfactory results obtained by these two departments are due to—

(1) *Insufficient Establishment.*

(2) *Defects in organization and in legal procedures to remove nuisances, etc.*

With regard to insufficient establishment, a glance at the attached schedule shows this to be so; notably in the case of the number of coolies employed in cleansing the drains. There are 36 miles of drains in this ward, and 30 coolies are told off for the pucka drain, while the kutcha, which form the great majority, are attended to by only 20! This number should be doubled; for cleansing 48 *bustees* there are only 30 coolies. The number of refuse and sullage carts are quite insufficient, and the inspector complains that the bullocks supplied by the contractor are worn-out and unfit for work.

Inspectors in a ward of this size should unquestionably be given *horse allowance*, for proper supervision is otherwise impossible. Considering the importance of the work of inspectors, their pay is too small, viz., Rs. 120 per mensem, with no prospect of any increment (*cf.* with pay of License Inspectors, which I understand varies from Rs. 150 to Rs. 200); moreover, they should be Europeans or Eurasians of a good stamp. Residence in their own ward should be compulsory. I believe it is supposed to be now, but it certainly is not enforced.

(3) *Defects in organization and in legal procedures to remove nuisances, etc.* I here repeat that the cleansing of roads and drains should be under one and the same supervision. The inspectors complain that the gowkhana carts are only under them during working hours, and they have not the same authority over the men, and cannot make them work out of hours, if they discover neglect. The inspectors have to be present at muster daily at 4-30, including Sunday: it is quite dark then at this time of the year, and in the rains the mehters do not start work till daylight for fear of snakes. In the eastern half of this ward there is a good deal of jungle, and probably good grounds for fearing snakes that cannot be seen. The muster could at all events in the suburban area be fixed one hour later, viz., 5-30, with greater economy of energy. The inspector, if he really does his work, is a very hard worked servant, and should be allowed to relegate the duty of holding muster to his assistant on Sundays. There should be fixed days for hearing municipal cases in courts; in this ward at least there is no fixed day. The inspector, after having been at work from 4-30 to 12, has frequently to attend court during the afternoon, and also to visit the head office on certain occasions. One great defect is the difficulty in bringing the law to bear on any offender who has infringed Municipal regulations. This, besides encouraging passive resistance and evasion on the part of the offender, is very disheartening to inspectors, and must in the end make them less keen in attempting to enforce regulations, if not altogether indifferent. To quote an example: in Ward 22 it was considered desirable to oblige a certain owner to demolish a most insanitary privy; proceedings in the shape of notices, summons, etc., were instituted on 20th June 1895, and yet the case is still pending and unsettled! This is no doubt an extreme case, but there is unquestionably great want of promptness in bringing home offences to individuals, and I am told that in more than half the cases taken up, no action results. Under present arrangements in every court-case the inspector has to attend court: if the inspector caused summonses to be served on all, or even the majority of offenders, it would mean that after working from 4-30 to about 12, he would have to attend court about 3 to 4 days in the week, and this in addition to visits to the head office; this might with some inspectors tend to make them less zealous in instituting cases which add so much to their work. Could not assistant inspectors be allowed to take up most cases to court? I am

induced to make these remarks, because even if the establishment was considerably increased and the drainage improved, results would still fall short of expectation, unless the supervision was strict and constant, and as from the point of view of sanitation the inspector is an important and very hard-worked official, I thought it well to suggest for consideration whether he might not be relieved of certain subsidiary duties, to enable him to carry out sufficiently the more essential duties of supervising his establishment and the sanitation of his ward. In both of the wards I inspected, the condition of things not only suggested deficient establishment, but *defective supervision*, though this does not reflect on the present incumbents, who are recent comers. When a case has been won and legal sanction given for carrying out an improvement or removing a nuisance, the inspector of the ward has no establishment or means at hand for giving effect to the order obtained; there is, I understand, a sort of establishment consisting of one or two *raj mistris*, a *karani*, etc., that go from ward to ward executing such alterations, but it is very difficult to get hold of them, and great delay occurs. House-holders are aware of this, and it is an additional inducement for them not to take the matter in hand themselves, but to leave it alone, on the chance of its being either considerably postponed, or even possibly forgotten. If there is no fund from which inspectors can *at once* draw the amount of money necessary for putting in hand such work, then the establishment above referred to, should be increased and better organised.

XII. Facts indicating and necessity of a special Building Act, and necessity of opening of new roads.—Facts and considerations setting forth this necessity have already been indicated under the first heading, when referring to roads. Throughout this ward, especially its western half, one meets in every direction houses and groups of houses crowded together and built with complete disregard to the requirements of neighbouring *bustees;* so also with *bustees*, where rows of huts crop up, leaving narrow spaces that cannot possibly be cleaned: Goaltooli and Badhpara *bustees* illustrate this, as also several portions of the interior of this ward, where for instance pucka houses have replaced huts, under altogether unsuitable circumstances. I see from the minutes of the proceedings of certain Committees of the Corporation that various new roads and extensions are under consideration, these being in most cases conditioned by the requirements of the protected system of drainage. Of those suggested, the two that seem to me absolutely necessary are (1) extension of the Lansdowne Road up to Hazrah Road, and not, as advocated by some, merely to the Beltollah Road; (2) Badhpara Road should be carried straight through the western half of the ward to meet Choulputty Road; but in addition to these new roads, some effort should be at once made to open out *bustees*, by enlarging existing passages or lanes. I would especially call attention to Goaltooli and Badhpara *bustees*, which require opening out for cleansing purpose, ventilation, and their vicinity to the General Hospital certainly makes this step all the more necessary and urgent: this might be done by widening Coondoo's Lane, which leads into these *bustees* from Kansaripara Road and opening up other passages, or at least carrying them straight through to Goaltooli Road instead of allowing them to end blind.

Monthly Report from Inspector's Diary No. II of Ward No. 22 for the month of September 1896.

Serial No.	Description.	Total last month.	Additions this month.	Removal this month.	Actual on the last day of this month.	Remarks
1	2	3	4	5	6	7
1	Area	838 acres.				
2	Population	42,591				
3	No. of pucka houses ...	1,429				
4	„ „ Cow-sheds ...	77				
5	„ „ Cattle-sheds ...	52				
6	„ „ Stables	70				
7	„ „ Gully-pits ..	20				
8	„ „ Tanks ...	823				
9	„ „ Wells ...	493				
10	„ „ Standposts .	171				
11	„ „ Kalisthans ...	1				
12	„ „ Slaughter-houses ...	Nil.				
13	„ „ Meat-shops ...	Nil.				
14	„ „ Hackney-carriage stands.	6				
15	„ „ Urinals { Old style / New „	... / 1				
16	„ „ Premises used for offensive and dangerous trade.	2				
17	„ „ Pucka privies ...	1,755				
18	„ „ Kutcha „ ...	4,074				
19	„ „ Connected „ ...	10				
20	„ „ Dust-bins in street ...	12				
21	„ „ Bathing-platforms ...	...				
22	„ „ Cattle-troughs ...	...				
23	„ „ Bustees ...	48				
24	„ „ N. S. depôts ...	1				
25	„ „ Municipal free latrines	3				
26	„ „ Jamadari licensed latrines.	4				
27	„ „ Registered markets ...	...				
28	„ „ Licensed „ ...	1				
	Daily number of alloted Gowkhana carts.	...				
29	Daily conservancy double carts.	...				
30	Daily conservancy single carts.	39				
31	„ „ Dome „	1				
32	„ „ Hired „	...				
33	„ „ Bustee ...	...				
	„ „ Conservancy.	...				
34	„ „ Raod-scarping.	...				
35	„ „ Horse-dropping.	...				
36	„ Hired cattle for sullage carts.	11				
37	„ Hired cattle for N. S. carts.	6				
38	„ „ „ „ Trade-refuse.	1				

Conservancy establishment consists, in addition to one Inspector and his assistant, of the following:—

Conservancy.						Dome.		N. S. carts, &c.		Nuisance.				Trenching ground.	
Outdoor working staff, Ward No. 23.	C. M. C. gowkhana carts.	C. M. C. T. R. carts (carts, bulls, and carter).	Working staff.			C. M. C. Dome carts.	C. M. C. Domes.	C. M. C. N. S. carts, (carts bulls, and carter).	C. M. C. sullage carts (carts, bulls, and carter).	Working staff.				Sardars.	Coolies.
			Peons.	Road coolies.	Bustee coolies.					Sarkars.	Peons.	Privy examiners.	Mehters.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	39	4	1	26	30	1	1	6	8	...	1	1	184 9 water.	1	23

Road Department.

Number of coolies employed in cleansing drain and repairing roads.	26 for road-repairing. 30 cleansing pucka drains. 20 ,, kutcha ,,
Number of supervising staff, including road overseer	7
Sarkar	1
Number of carts employed for drain cleansing and road scrapings	8
Gully-pit coolies	2
Road-scraping coolies	2
Watering coolies	3
Bhisties	9

A Report on the Sanitation of Kidderpore and Watgunge, by Surgeon-Captain H. W. Pilgrim, M.B., I.M.S.

Kidderpore and Watgunge are contained in ward 25, the boundaries of which may be roughly indicated as follows:—On the north, Tolly's Nala; on the west, the Hooghly; on the south-west and south, Nemakmahal Ghat Road and Taratalla Road; on the east, Garden Reach Circular Road. Projecting beyond these boundaries is a portion of Kidderpore, bounded on the south by Ekbalpore Road, and on the east and west respectively by Diamond Harbour and Garden Reach Circular Roads, which roads converge to meet at a point on the north.

(1) *Condition and cleansing of roads.*—Fairly good, and the direction and width of the roads is less unsatisfactory, with the exception of the portion of Kidderpore included between Diamond Harbour and Garden Reach Circular Roads, where the lanes are extremely narrow and tortuous.

(2) *Surface drains.*—Discharge on the northern side (Watgunge, &c.) into Tolly's Nala, while for the southern parts of Kidderpore the outfall is for the most part into the Chetla sluice. In this ward the same classes of surface drains exist as in Bhawanipur, only their condition is worse. In Kidderpore, between Diamond Harbour and Garden Reach Circular Roads, the condition of things is much aggravated by the depth and number of these drains, which often form the narrow and winding passages that exist between various series (I cannot say rows) of pucka houses. This marked feature of the Kidderpore drains must make them extremely difficult to clean, for in many cases carts could not approach within even reasonable reach, and the coolies must stand in the drains themselves between brick walls in order to clean them out. The stench from these drains, especially those between pucka houses, was scarcely endurable, and was the subject of complaint from natives on all sides. Although natural difficulties and insufficient establishment would account partly for what I describe, still matters were made infinitely worse by want of proper supervision and the enforcement of ordinary regulations, *e.g.*, in various parts I came across places where water and gas pipes were laid with complete disregard of existing drains, passing through such drains and causing stoppage and general derangement of levels. The road overseer showed me a drain so obstructed in the Puddapukur Road (off Watgunge), and a Babu in Moonsha Tolla Lane vouched for the accuracy of a similar explanation of the congested condition of a drain in that lane, where one of the main pipes passed directly through it. The main drain going across Comedan Bagan Lane was completely blocked by some obstruction. I visited the outfall into Tolly's Nala, where the drainage is collected into a large *nikanie* drain, which passes across Moonshiganj Road, and then into an ordinary kutcha conduit leading into Tolly's Nala. This kutcha conduit was certainly guarded by a sluice to prevent back flow with the flood tide, but no notice was taken of the fact that Tolly's Nala water, in the rains at all events, rises higher than the level of the road at this point, so that the road and surroundings are inundated at times. If this channel had high pucka sides, continued up

so as to join the wall or breastwork, on the side of the road, this overflow would be prevented, and the level and outflow would be improved by the floor of this conduit being pucka, instead of a composite of silt, etc. The culverts were at times responsible for a block merely because they are not kept properly cleaned out, and in some cases they are old and badly built, and have subsided *en masse;* in other cases, they are in a broken and crumbling condition. The difficulties of cleaning these drains are increased by extensive projections of shops over them, these projections being generally pucka, completely roofing in the drains, and extending often for yards along the length of the drains. Under proper representations, these could surely have been removed. These trade projections are marked features along the Watgunge, Diamond Harbour, and Garden Reach Circular Roads, &c. The supervision does not prevent solid excrement from finding its way into the drain. In such a crowded and well-known thoroughfare as Watgunge Road, I observed on the north side of the street a house containing in one of its rooms a cow, the solid excrement from which was, in the most open way, being conducted by a pucka channel into the surface drain of the street outside. This form of pollution is also well seen in Goalapara and Doriapara *bustees*, where large numbers of buffaloes and cows are kept.

(3) *Condition of public and house latrines.*—There are two public latrines, both of which I inspected—one just to the north of Watgunge Road in Dalpara *bustee*, and the other close to the Sonai market. Both were in bad repair and badly served. The description of the urinals and privies in the Bhawanipur report is equally applicable to this ward, except that in this ward their construction is still worse, and they appear more neglected.

(4) *The sanitary condition of compounds and courtyards*—In this ward, possibly due to the greater proportion of Musalmans, there was filth on every side, not merely around the houses, but in the courtyards and compounds. Offensive heaps of organic matter containing remains of animals, &c., more or less decomposed, were frequently seen; and privy washings were sometimes found to discharge on the earth within the courtyards.

(5) *Overcrowding of houses and bustees.*—Though a large portion of this ward is thinly populated, in the areas properly understood as Watgunge and Kidderpore, there is very great overcrowding both of houses and of people inhabiting them. This is especially well marked in the part of Kidderpore between Diamond Harbour and Garden Reach Circular Roads, where pucka buildings and *bustees* exist in such large numbers and are so crowded and badly arranged as to endanger the public health, if an epidemic, such as plague, should ever break out.

(6) *State of tanks and wells used for washing and bathing.*—They are in much the same condition as in Bhawanipur, but a very fine large municipal tank is situated off the Puddopukur Road, and is well kept; it is in the fashionable quarter. *Wells* exist in large numbers in the crowded parts of this ward, and are usually in bad repair.

(7) *State of stables and cowsheds.*—None licensed. Stables very much as in Bhawanipur, but the cow-houses in Kidderpore and Watgunge are in a much more insanitary condition, especially in Goalapara and Doriapara *bustees*. In one small house I counted 25 cows packed *closely together*, while outside the surface drains and surroundings generally were full of decomposing excrement.

(8) *Storage of grain, rag depôts, second-hand clothes, markets.*—There is no extensive granary in this ward, but there are several shops in the interior of Dalpara *bustee* north of Watgunge Road, where grain is stored in considerable quantities. Such places were fairly clean, where the grain was actually stored, but the surroundings were filthy. I could hear of no rag depôts or second-hand clothes shops in this ward. I inspected the four markets. The one in Kali Bazar was undergoing alterations, and promises to be good, but the Sonai market is very defective: a portion of it has not even a pucka floor. The surface drains arround it were filthy, and also some of the houses. The other two markets are very small and do not call for comment.

(9) *Strength and working of conservancy establishment.*—Is very similar to that described as existing in Bhawanipur, and the remarks there made concerning insufficient establishment and defective arrangements equally apply to this ward, except that in this ward there are two fixed days for trying municipal cases. In this ward the road overseer says he has only 38 coolies, who are distributed as follows:—8 for road repairs, 18 for pucka drains, and only 12 for kutcha drains. As there are 21 miles of drains, the majority kutcha, at least double this number of coolies would be required to cleanse the drains.

(10) *Facts indicating necessity of a special Building Act and of opening of new roads.*—The manner in which pucka houses were crowded together and mixed up with *bustees* in Kidderpore and parts of Watgunge affords strong evidence in favour of the necessity of a Building Act. This is especially well seen in the part of Kidderpore between Diamond Harbour and Garden Reach Circular Road, and especially in Moonsha Tolla Lane and passages leading off it, such as Ganga Dhur Banerjee's Lane, Turyfden Tanks 1st and 2nd lanes, Gopal Kristo Ghose's Lane. At the present moment a new house is being finished close to where the latter lane debouches into Moonsha Tolla Lane. Permission should never have been given for building a new house in such an overcrowded locality. The house referred to is chock-a-block of others, from which what little sun and air is available has for the most part been excluded. A road should be made running straight through this portion of Kidderpore. If Moonsha Tolla Lane were widened into a 25-foot road and made to extend *straight* from Diamond Harbour Road to Garden Reach Circular Road, a great improvement would be effected; also the passages in the *bustees* on each side of Watgunge Road require widening and the *bustees* opened out generally, especially Dalpara, Chamarpara, Taktapara, and Weston's *bustees*.

Statement as asked for by Dr. Pilgrim when in the office of Ward 25 (Watgunge) on 23rd October 1896.

Serial No.	Description.	Total last month.	Additions this month.	Removal this month.	Actual on the last day of this month.	Remarks.
1	2	3	4	5	6	7
1	Area	729 acres.				
2	Population	26,833				
3	No. of pucka houses ...	615				
4	„ „ Cowsheds ...	56				
5	„ „ Cattle sheds ...	22				
6	„ „ Stables ...	25				
7	„ „ Gully-pits ...	...				
8	„ „ Tanks	334				
9	„ „ Wells	437				
10	„ „ Standposts ...	114				
11	„ „ Kalithans ...	1				
12	„ „ Slaughter-houses ...	...				
13	„ „ Meat shops ...	10				
14	„ „ Hackney-carriage stands.	1				
15	„ „ Urinals { Old style / New „	... / ...				
16	„ „ Premises used for offensive trade.	14				
17	„ „ Pucka privies ...	484				
18	„ „ Kutcha „ ...	2,025				
19	„ „ Connected „ ...	..				
20	„ „ Dust-bins in street ...	2				
21	„ „ Bathing platforms ...	...				
22	„ „ Bustees... ...	28				
23	„ „ N. S. Depôts ...	...				
24	„ „ Municipal free latrines.	1				
25	„ „ Jamadari licensed latrines.	1				
26	„ „ Registered markets...	...				
27	„ „ Licensed „ ...	4				
	Daily number of allotted gowkhana carts.					
28	Daily Conservancy double carts.	...				
29	Daily Conservancy single carts	24				
30	„ „ Dome „	1				
31	„ „ Slop „	..				
	„ „ Hired „	...				
32	„ Coolies' Bustee ...	30				
33	„ „ Conservancy.	10				
34	„ Dome ...	1				
35	„ Methers...	110				
36	„ „(?) Horse droppings.					
37	„ Hired cattle for Slop carts.					
38	„ Hired cattle for N. S. carts.					

G. C. PAL,

The 24th October 1896. *Conservancy Inspector, Ward 25.*

APPENDIX IV-B.

Evidence of Dr. C. Banks, M.D., Chief Superintendent of Conservancy to the Corporation of Calcutta, recorded before the Medical Board.

Detailed proceedings of the meeting of the Medical Board held on Thursday, the 3rd December 1896.

Dr. Banks, on special duty as Chief Superintendent of Conservancy to the Corporation of Calcutta, gave evidence under the following heads:—

I.—Overcrowding.

(1) *Q.*—Is section I of the Sanitary Officers' Report borne out by your personal experience? Can you quote similar instances? *A.*—Yes, the statements are borne out by my personal experience. In No. 108, Jaun Bazar Street, of which I have given a description in my report of the 29th November 1896, and in No. 13, Dayahata Street, mentioned in my report of the 8th November 1896. There are many other instances, but I have not had time to go over all the reports and select them. These are individual cases. Other instances are No. 105, Cotton Street, a lodging-house, and all the houses between Banstola Street and Cotton Street except private houses. If you refer to the overcrowding of buildings, then I would say that the whole of Wards 5, 6, 7 and 8 are overcrowded. The statement given in the report may be taken as correct, and I fully concur in it.

Q. (*By Mr. Playfair*).—What class of people inhabit these overcrowded houses? *A.*—They are shopkeepers, hawkers, and brokers chiefly, and pilgrims occasionally. They rent the rooms and are monthly tenants. I have given details in regard to the house in Jaun Bazar. (See report of 29th November 1896.)

Q.—Are there women as well as men? *A.*—Yes, there are women, but not nearly so many women as men. They cook inside the houses as a rule, sometimes in the verandah. They are 2, 3, and 4 storeyed houses. The men cook their own food in most cases. The women are decidedly in the minority, judging from what I have observed.

(2) *Q.*—Are the provisions of the law [sections 320 and 385(*e*)] insufficient? *A.*—I do not think they are insufficient. (See Appendix A.)

(3) *Q.*—How do they work in practice? *A.*—I understand no case has been dealt with under section 320, and I understand that section 319 has not been brought into play until recently. It was called into requisition the other day *re* an insanitary and dilapidated building at No. 81, Burtollah Street. (See report of 8th November 1896.)

Q. (*By Mr. Playfair*).—Whose immediate duty is it to put sections 319 and 320 into force? *A.*—I should say it is the duty of the Medical Inspectors of the wards; they should report to the Health Officer the condition of overcrowded buildings, and the Health Officer should issue orders. The instance to which I refer is 81, Burtollah Street, *pucka* building, where it was impossible to clean the privy, because the mehters considered it structurally dangerous and refused to enter it. The privy was approached by a plank reaching from the first floor verandah to the seat of the privy. The privy had not been cleaned perhaps for months. Application was made to a Presidency Magistrate, certain orders were issued, and the case is pending. My answer to question (3) is that in practice these sections have not been worked.

(4) *Q.*—How far, in your opinion, is the insanitary condition of the town due to, or aggravated by, the manner in which houses are built? *A.*—Houses are built in such a manner as render it impossible to sanitate them. There are very narrow passages left, along which mehters pass to cleanse the privies. This is the case particularly in Wards 5 and 7, in which, moreover, the lanes between houses are used simply as dust-bins. All the refuse is thrown through the back windows into lanes between blocks of high buildings. In one case I found a lane, 60 feet long, blocked up at both ends by dead walls containing refuse 9 feet high. The refuse is simply thrown into such lanes and left there. I had to climb a ladder to inspect the place referred to. You will get a full description of it in my report, dated 17th November 1896. I was informed by the Babu who made the complaint that there was a door there about 30 years ago. I know of other similar cases. It is a common practice to throw house refuse from back windows into such lanes. I know of another case even worse than the one I have mentioned at the back of 115, Cotton Street. The existing establishment of coolies had to pass through a private room of the party concerned and a back window into the lane, which, as far as I remember, was 16 inches wide and well over 100 feet long, situated between two blocks of building three-storeys high, closed at one end by a privy and at the other by a *pucka* wall. This space was filled with house refuse, night-soil and other filth. In another instance (a new building) the passage between two blocks of houses was only 9 inches wide. The construction of the privy was sanctioned by the Commissioners against the wishes of the Health Department. It is absolutely impossible for any mehter to get at this privy. One of the blocks of buildings referred to was new, or rather an old building enlarged. I understand that a man may build up to his boundary line in the case of old buildings. There are regulations to control the construction of new, but not to control the extension of old, buildings. In the case to which I am referring, the privy is on the

ground floor, and the filth falls into a vault in the passage below, from which it is impossible to remove it. I do not think any mehter could squeeze himself into a passage 9 or 11 inches broad. There were many more instances. The construction of the houses is faulty, and the narrowness of the streets and lanes renders proper scavenging absolutely impossible

(5) *Q.*—Are the existing regulations insufficient? *A.*—I consider the building regulations insufficient in themselves. I have directed the attention of the Engineering Department to numerous buildings being erected at present which I think ought not to be allowed.

Q. (*By the President*).—Are the existing building regulations enforced? *A.*—Plans are submitted to the Health Department for examination as to privy site only, and for any remarks which the Health Officer may desire to make regarding the proposed privy. The matter is ultimately handed over to the Engineer's Department, and the final decision rests with that Department. The construction of the building according to plans submitted is under the supervision of the Engineer's Department, with which the decision as regards situation also rests.

(6) *Q.*—In your opinion which is the more unhealthy—a *bustee* of tiled huts, or a group of tall masonry houses such as Marwaritola? *A.*—I would rather live in a *bustee* than in any of these tall masonry houses.

Q. (*By Mr. Playfair*).—Under this heading (I) of overcrowding, can it only be got rid of by getting the people to go elsewhere, or would it be possible to erect a type of houses which would be sanitary and good? *A.*—It would be quite possible to erect such houses.

Q.—Do you know whether the owners of these houses sublet them, or take the rents from the lodgers themselves? *A.*—The houses to which I have referred are all let out by the owners to different parties: these overcrowded houses are all tenanted. In some cases the whole house is taken by one person and the rooms sublet by him.

Q.—In the case of the houses regarding which you took action under section 319, did the owners receive the rents themselves, or did they let them to others? *A.*—I do not know. The house in Jaun Bazar Street was let to the people living there. An agent collects the rents, which vary from Rs. 2-6 to Rs. 7 a month.

II.—Public Latrines.

(1) *Q.*—Are the statements on this subject in the Sanitary Officers' Report borne out by your personal experience. Can you quote similar instances? *A.*—I am quite sure that the accommodation in the public latrines is insufficient. They are inadequate in number and there are too few seats. I agree generally with the statements in the Sanitary Officers' Report, and I can give confirmatory instances.

(2) *Q.*—How many of these are there? *A.*—There are 50 free latrines in the whole of Calcutta including the added area.

(3) *Q.*—What is the average number per ward, or how are they distributed? *A.*—The average per ward is about two. There are 25 wards. In Wards 12, 16, 17, 19, 20, 21, and 23 there are none. Most of these are European wards. In addition to the 50 latrines there are urinals. All the urinals which I have seen have no latrnies attached, except one at Ahiritola ghat. In every instance the urinals are used as latrines, and urinating goes on around them outside. I have not seen any urinals which have not been used as latrines and near which urinating does not go on outside.

(4) *Q.*—How many seats are there in each, and do you think the accommodation sufficient? *A.*—There are about 20 seats on an average in each latrine. I think there should be more seats and there should also be more latrines. The latrines are absolutely insufficient. I have seen crowds waiting at the latrines from 6 to 8 in the morning. There are partitions between the seats. The latrines are, as a rule, made of masonry, and the urinals of corrugated iron; the floors also are *pucka*. None of the public latrines which I have seen are *kutcha*. I do not think there is very much to object to in them. They seem to be fairly well flushed. Wards 4, 7, 9, 15, 24 and 25 have each one public latrine.

Q. (*By Mr. Playfair*).—Are the latrines in the jetties, public or private? *A.*—They belong to the Port Commissioners; they are not municipal latrines, but are treated as public and the municpal mehters attend them.

Q.—Then you consider there should be more latrines in each ward? *A.*—In ward 9, one latrine is not by any means sufficient. Generally, I do not consider there are enough latrines nor enough seats in the existing ones.

(5) *Q.*—What establishment is there for these places, ward by ward, and is it, in your opinion, sufficient? *A.*—There are 53 methers for 50 latrines. I think that is sufficient. Wards Nos. 24 and 25 have no special establishment for free latrines; they are dealt with by the ordinary mehter establishment. There are, therefore, 53 mehters for 46 latrines in the town and added areas.

Q. (*By the President*).—At what hours are the mehters in attendance? *A.*—I do not know; most of them, I understand, live on the premises. (See report of 4th December 1896, which gives full information on this question.)

(6) *Q.*—How many of the latrines are connected with the sewers? *A.*—All the latrines in the town area are connected, that is to say, 46 out of the 50 public latrines, to the best of my knowledge, are connected with the sewers.

Q. (*By the President*).—Does it follow from that that the work of the mehter is light? *A.*—Yes, the mehters have very little to do except to see to the flushing. (See report of 4th December 1896.)

(7) *Q.*—In what condition are the flushing arrangements for these latrines? *A.*—I think the flushing arrangements are fairly satisfactory under present conditions, but could be considerably improved. The water-supply is not constant.

(8) *Q.*—Does the flush work all day; if not, describe it shortly? *A.*—The hours vary. Sometimes the water-supply is cut off entirely.

Q. (*By Mr Playfair.*)—We saw a remark by the Engineer that there was not a sufficient supply to flush more than once in 10 days. *A.*—That referred to the flushing of the sewers.

Q. (*By the President*).—How are the latrines flushed? *A.*—Some of them are flushed by taps, and some of them by hand, with water obtained from cisterns.

Q. (*By Mr. Playfair*).—Are any of these latrines automatic in their working? *A.*—I do not know. In my report for the Northern Division, I find it stated that the flushing arrangements are tolerably good. I am not in a position to say much about the flushing arrangements. I visited the latrines which I have seen when they were being used.

(9) *Q.*—Are they a nuisance to the neighbourhood where they are placed? *A.*—I consider them a nuisance to the neighbourhood.

Q. (*By the President*).—Has any case come before you of starting a new public latrine and getting a site for it? *A.*—Yes, there has been one case in Nimtallah Ghat Street. The difficulty has been to get a suitable site. The people do not complain as a rule until the places are under construction or completed. Public latrines are necessary evils frequently complained of.

Q.—Would it be possible to have a latrine of a pattern which would not be offensive to the neighbours? *A.*—I suppose it is within the bounds of possibility. If there were adequate flushing arrangements, the night-soil would be speedily disposed of; but so many people use these latrines that I do not think it is possible to entirely avoid or prevent objectionable odours.

Q.—(*By Mr. Playfair*).—Do they use any deodorizing material to get rid of the smell? *A.*—Disinfectants are supposed to be used, but they seldom are, or are used too sparingly.

Q. (*By the President*).—Do you think it is possible to remove that nuisance? *A.*—It is not possible to completely remove the nuisance, but the smell might be mitigated by better and more adequate flushing arrangements and disinfectants and the liberal use of deodorants. I would mitigate the nuisance by removing the latrines to areas which afford room for them, to areas not overcrowded with houses, or to portions of the town not thickly populated. I think the sites are very badly selected from that point of view, viz., at the end of narrow lanes and amidst large and high blocks of houses, such as you find in Burra Bazar and Jorabagan. In short, they should be in places where there is more ventilation.

Q.—Is it practicable? *A.*—I think it is practicable if funds are available, but I do not know where the municipality is to get the money wherewith to do it. That difficulty would be obviated if all the latrines in the town were connected with the sewers.

Q.—When the flush is on, the fœces accummulated in the seats. *A.*—The seats are not flushed by taps, but washed by the mehters, which is practically the same, or answers the same purpose.

Q. (*By Mr. Glass*).—Could that not be done if mehters were always there? *A.*—Yes, but that is a point I have not attended to. (See report, dated 4th December 1896, subsequent to meeting of 3rd December 1896.) Owing to the want of continuous flushing, the latrines are a nuisance to a certain extent, and must be a nuisance. If there were a continuous supply of unfiltered water, the nuisance would be considerably abated.

III.—Private latrines.

(1) *Q.*—Are the statements on this subject in the Sanitary Officers' Report borne out by your personal experience? Can you quote similar instances? *A.*—Yes, I agree with everything said there, and can quote many similar instances. In ward No. 3 I inspected on 23rd November 1896 not less than 50 privies, not one of which can be properly examined or inspected by the officers in charge. The *gumlas* are placed at a great distance from the doors of the privies. The entrances to these privies are so constructed that the mehters have to crawl on their hands and knees, or even lie down, in order to get at the *gumlas*. The *gumlas* vary in size; some of them are very small, others are enormously large, when attached to houses occupied by numerous persons. Some of the *gumlas* are fixtures, from which the mehters simply remove the night-soil by means of dippers. The *gumla* is directly under the seat. The vaults are so dark that a lighted match reveals nothing but what might be likened to an immense cave. The *gumlas* are hauled out by mehters, but the big *gumlas* are either not cleaned at all, or only partially cleaned, and I am not surprised. I regard it as inhuman that the mehters should be obliged to enter the precincts of such poisonous places. The following are localites which were inspected:—From 111 to 114, Durga Churn Mitters' Street; from 153 to 159, Musjeed Baree Street; from 13-1 to 15, Ram Chand Nundy's Lane; from 35 to 42 Hurree Ghose's Lane; from 31-11 to 34-4, Kassynath Bose's Lane; from 1 to 21, Bheem Ghose's Lane; from 18 to 30-1, Hurry Ghose's Street; from 20 to 22, Kurbala Tank Lane; from 45 to 48, Simla Road; from 50, Simla Road, to 1, 2, 3 Hajee Zachariah's Lane. These are some of the instances, and I could give others. (See my reports of 11th November, 17th November, 20th November, 23rd November, and 25th November 1896.)

(2) and (3). *Q.*—How many of these are there, and what proportions of them are connected with the sewers, and of those not connected, how many are *pucka* and how many are *kutcha*? *A.*—The number of private privies is 60,970, of which, roughly speaking, 5,142

are connected with the sewers and have flushing arrangements; 22,838 are *pucka* privies and 32,990 are *kutcha*.

Q. (*By the President*).—What do you mean by *kutcha* and *pucka*? *A.*—*Pucka* privies are made of masonry; *kutcha* privies, for the most part, have the seats and vaults made of masonry, and the walls of bamboos and mats. The roofs are made of tiles or corrugated iron.

(4) *Q.*—What is the average number of privies cleaned by each sweeper? *A.*—The average number is 23·2. That fairly represents the amount of work each mehter has to do. Some of the privies are very large.

(5) *Q.*—How many night-soil and house-service mehters are there? Are they sufficient? If not, what would you propose? *A.*—The number of night-soil or house-service mehters for unconnected privies is 1,996; they are servants of the Corporation. I do not think the number sufficient; they ought to be increased by at least 25 per cent. so long as there are so many privies not connected with the sewers and not flushed.

Q. (*By the President*).—Must the mehters necessarily be adults? *A.*—Yes, most necessarily. They might utilize boys for collecting the night-soil, but I do not think it would be wise to do so. The mehters collect the night-soil in small chatties and pour the contents into buckets. The boys certainly would not be able to carry these buckets.

Q. (*By Mr. Playfair*).—Do many native householders keep private mehters?. *A.*—Some of them keep private mehters for cleaning house drains and washing privy seats. No one who pays the latrine tax keeps a private mehter, so far as I know, for cleaning privy vaults. There are certain well-to-do parties who use commodes. It is the custom in such houses for private mehters to collect the night-soil and deposit it in *gumlas* in the servants' latrines for removal by the municipal mehters in buckets. The bucket is not left by the municipal mehters: it is carried to the depôt, into which the night-soil is thrown. The servants' privies are included in the total number of connected and service privies.

(6) *Q.*—What is, generally speaking, the condition of private latrines, both *pucka* and *kutcha*, with regard to structure, ventilation, site, cleanliness and possibility of being cleaned, *i.e.*, access for mehters' service? *A.*—Their condition, generally speaking, is very imperfect in every way. In one instance the entrance to the privy vault was only 9 inches high, and was the only means of access for cleaning it. In another case the privy was within 21 inches of a bamboo wall, and the mehter was supposed to get at and keep the place clean. An earthenware chatty holding 12 gallons of urine was found close to the privy in question.

(7) *Q.*—Are they properly cleaned, and how often are they attended to? What does cleaning consist in? Is any disinfectant ever used? *A.*—Privies are supposed to be cleaned once a day; they are not cleaned as they should be, being often neglected for days at a time. I have brought to light some privies which had not been cleaned for a year, or probably for a longer period. Connected privies are never cleaned except when reports are made that the connection is choked. I found instances of this in 201, Harrison Road (a lodging house); in 72, Burtola Street, which was full of night-soil, and in which 50 old shoes were found; in 406, Upper Chitpur Road; in 105, 106, 108 and 130, Cotton Street, 14 tons of night-soil were removed from the Harrison Road privy, representing, perhaps, the accumulation of many years. That was the worst case I found. Ninety persons resided in the house under discussion. Choked privies were also found at 17-1-1, Madhoo Roy's Lane, and in 9, Kansaripara Lane. These are examples of obstructed connected privies, which afford no means of flushing.

Q. (*By the President*).—How do you account for the 14 tons of accumulation? *A.*—The explanation is that it was not brought to the notice of the supervising agency. There is no establishment for looking after connected latrines. There was a drop of at least 58 feet, the night-soil falling on to a *pucka* floor on a level with the seat of the ground-floor privy. It then passed through an opening into the privy vault, the floor of which is connected with the sewer by means of a syphon pipe. These are cases of connected privies which were choked up.

Q. (*By Surgeon-Captain Dyson*).—There are 5,142 connected privies, and there are a large number of privies cleaned by hand. Taking them all round would you prefer to go on with the system of connecting with the sewers, which may become choked, and of which nothing would be known until the householder complained? *A.*—It would be a thousand times better to have the unconnected privy system if no complaints are made when connected privies become choked; but I most decidedly say that all privies ought to be connected, and be provided with proper arrangements for flushing. It would save a large amount of money in the up-keep of establishment.

Q. (*By Mr. Playfair*).—Of course, you mean, if the connected privies are properly trapped? *A.*—Yes.

Q. (*By Mr. Playfair*).—Are the natives in the habit of misusing connected privies? *A.*—Yes, there is the case of the 50 old shoes in the vault of a connected privy. There is no mistake that they do not know how to use connected privies on the old system. The connected privies in the houses of educated natives are not, I understand, badly used. Connected privies could not be kept cleaner anywhere than those at No. 20, Beadon Street, for example. In my opinion instruction in the use of such privies should be circulated.

Q.—Have you no experience of private privies among the middle class natives? *A.*—I have inspected some. Some of those I have examined were kept scrupulously clean. In one case, No. 4, Williams Lane, the house and privy were exceptionally clean, and there was no bad smell in the place. The owner wished to introduce connected privies, and I accorded

sanction. As another excellent example of scrupulously clean mehter-service privies, see house at No. 21, Beadon Street.

(8) *Q.*—The night-soil presumably is collected in *gumlas*. How are the urine and privy washings disposed of? *A.*—Ninety per cent. of it soaks into the soil, and the rest finds its way into surface drains.

Q.—Describe a privy? *A.*—There is a seat, vault, walls and floor. The seat is the height of a brick; a hole is left in the floor about nine inches in diameter, and the night-soil drops into the *gumla* contained in the vault. There is no pipe attached to the hole in the floor; the drop is ordinarily 3 or 4 feet. The vault opens on to a passage outside the house premises which is reserved for the mehters. I refer to ground-floor rooms. The drop from the top floor privies is either through a tube made of masonry or Raniganj pipe, or simply through space to the vault below. The *gumlas* are ordinary porous earthenware. In some cases there are no *gumlas*, holes in the floor of the vault being preferred. The night-soil in such cases is baled out by mehters.

Q. (*By Mr. Glass*).—Is there a standard plan? *A.*—No standard plan has been sanctioned by the Commissioners. The better class of natives use *pucka* privies and the lower classes *kutcha* privies, which have been previously described.

Q. (*By Mr. Playfair*).—The remarks you have been making apply to lodging-houses for the better classes? *A.*—Those that are *pucka* are generally part and parcel of the building, but in these cases the night-soil drops into a vault cut off from the dwelling-house, and access from this vault is either from a street or narrow passage.

Q. (*By the President*).—Are not the latrines of the upper classes of this type too? *A.*—Yes, they are very much the same. The case to which I referred as being thoroughly clean was a private mehter-service privy.

Q.—Have you seen any mehter-service privies in the houses of the upper classes of native? *A.*—Yes many.

Q.—Are disinfectants used? *A.*—I have not seen them used. In fact they are seldom or never used unless on medical advice.

Q.—What happens with the urine and privy washings? *A.*—Ninety per cent. of urine soaks into the soil or gets into surface drains. If there happens to be a receptacle for urine, it is generally found overflowing. There is not sufficient provision for the removal of urine and privy washings.

Q.—It is not the case that urine sometimes trickles down walls opening on to lanes? *A.*—Yes, that is very common. Urinals are frequently constructed on the roofs of houses, and the urine passes down the walls into the court-yards. Where there is a downpipe, it is generally broken.

Q. (*By Surgeon-Captain Dyson*)—Have you ever seen the floor of a vault which you could say did not leak? *A.*—I do not think I have in *kutcha* privies. If the urine does not get into the floor of a vault, it is because it is so saturated that it cannot absorb more.

(9) *Q.*—Is the privy accommodation sufficient for the needs of the people using them? *A.*—It is not adequate. I think there should be a great many more public latrines. On the 28th November 1896, I inspected the school premises Nos. 87-1-2-3-4 and 5, Cornwallis Street. It is a native school in which there are 400 or 500 boys, the scanty privy accommodation of which was pointed out by one of the Medical Inspectors. There are altogether 3 mehter-service latrines, each single-seated, attached to the building; the latrine at the back of the house is used by the Principal and his family, consisting of 6 persons; the privy vault opens into a large open space behind. The door was broken; the latrine was fairly clean, but badly ventilated. The second latrine was in the courtyard at the bottom of a flight of stairs leading to the top of the house; the vault door has no hinges, and there is no ventilation when the privy door is shut. The vault opening into the courtyard contains the *gumla* for receiving night-soil from this latrine. Neither of the *gumlas* contained in this vault could be seen without the aid of a lantern. Both *gumlas* were empty but foul, and the floor of the vault contained a large accumulation of urine. The door and walls in the neighbourhood were tarred. This latrine was used by between 400 and 500 boys. The third latrine was on the second floor immediately above the one just described; the urine escaped through a channel in the floor of the privy and flowed through a hole down the wall to a pit in the floor of the courtyard connected with the sewer. There is no down pipe. If I mistake not, you will find another case referred to in my report No. 7, dated 25th October 1896, at which the house of E. A. Cohen is situated.

Q. (*By the President*).—Are any of the latrines in dangerous proximity to the water-supply either of wells or tanks? *A.* In my report of the 28th November 1896, I have mentioned the case of a well in the middle of a compound in which there is a cattle-shed and privy. This is exceedingly common. (See also report, 7th December 1896.)

(10) *Q.*—What is the *takeed* establishment, and how does it work? *A.*—The *takeed* establishment is employed to carry out petty repairs to privies, surface drains, etc. It is under the Health Department. In each division there are 2 masons, 2 carpenters, 1 thatcher and 5 coolies. The *takeed* establishment is for the purpose of executing work in default of compliance with requirements of notice by owner under section 286. This establishment is absolutely inadequate.

(11) *Q.*—Are sections 243, 286, 288, 292, 294, and 385 (*b*) sufficient? How are these sections worked in practice? What bye-laws have been made under section 412(*g*)? *A.*—I think sections 243, 286, 288, 289, 292 and 294 are sufficient; section 385(*b*) is not sufficiently

summary and is said not to work well. Notices have been served, but the works have not been executed. The Inspectors bring defects to notice. Under section 286 notices are served, and if the work is not carried out, the Commissioners do it and send in the bill to the party concerned. I am quite satisfied that a vast deal could be done if these sections were more systematically put in force in certain localities. I cannot imagine anything more complete than the provisions of these sections, except 385 (*b*), which is tardy. Notices under section 286 are signed by the Superintendents.

Q. (*By the President*).—What action has been taken under section 286? *A.*—During the plague scare a vast deal has been done under section 286. We have also, under 307, entered premises, removed refuse and white-washed where necessary, cleaned drains, and have billed the people with the expense. Warning notices under sections 302 and 307 are signed by inspectors.

Q. (*By Mr. Playfair*).—The Chairman could not know unless it is reported by the Health Officer. Is it correct to say that the Health Officer could not know unless reported by the Superintendents? *A.*—Under section 61, the Chairman has, I understand, delegated the powers conferred by section 286 on Superintendents to enable them to sign notices; warning notices under sections 302, 307 are served by Inspectors on the spot. The extra gang find work through notices signed and served by Inspectors under sections 287, 290, 307 and 318. This has been done lately and temporarily. I do not know what the procedure was before; I can only speak of what has been going on within the past six weeks.

Q. (*By the President*).—When was this delegating order passed? *A.*—I do not know. (For fuller information on the sections mentioned, see Appendix.)

Q.—Suppose an Inspector served a notice to erect a Donaldson's latrine in a particular place? *A.*—The *Inspectors* could not do that, perhaps, without the orders of the Health Officer.

Q.—Has there been any attempt to have a standard plan of latrine? *A*—The Commissioners have not adopted any standard plan. The Health Officer strongly recommends Donaldson's latrines, which, however, have not been adopted as a standard plan, so far as I am aware. They are undoubtedly excellent latrines and very cheap. The Chairman, I believe, approves of these latrines being erected.

Q. (*By Mr. Playfair*).—The Inspector reports to the office. Who governs the Inspectors? *A.*—There are three Superintendents who are under the Health Officer.

Q.—Do these Superintendents get reports whether the thing has been done or not done? *A.*—Yes.

Q.—Then is it their duty to apply the provisions of the 2nd clause of section 286, that is to say, to get the works executed in default; or do they report to the Health Officer? *A.*—They do not report to the Health Officer; if the work is petty and costs under Rs. 20, the *takeed* establishment may execute it; if over Rs. 20, it is referred to the Engineering Department. The result is entered in a register kept for that purpose.

Q.—Do they not apply the clause so as to recover the costs from the owner? *A.*—Yes. Recoverable bills are made out and sent to accountant, who forwards them to Joint Collector for realisation.

Q.—The three Superintendents are primarily responsible for putting the 2nd clause of section 286 into force, and do they not report to the Health Officer? *A.*—They do not. In my opinion section 286 is sufficient, but there should be a penal clause attached to it. I am in a position to state that this section has been worked well in many portions of the town.

III—A.—Night-soil depôts.

(1) *Q.*—What is a night-soil depôt? *A.*—A night-soil depôt is an enclosed building to which night-soil is brought by the mehters to be disposed of as quickly as possible. It is thrown into pits communicating with the main sewer, into which it is washed with as much water as is available.

(2) *Q.*—How many are there in each ward? *A.*—There are 13 night-soil depôts There are no depôts in wards 2, 12, 16, 17, 20, 21, 22, 23, and 25.

(3) *Q.*—How and when is the night-soil conveyed to them? *A.*—The night-soil is conveyed to them in buckets and by carts in the suburban area early in the morning.

(4) *Q.*—How far have the mehters to travel to them from their beats? *A.*—The mehters have distances to travel which vary from ¾ of a mile to 1½ miles.

(5) *Q.*—What establishment is attached to them? *A.*—There are 33 depôt mehters for 31 depôts.

(6) *Q.*—In what state of repair are they? *A.*—Some of the depôts are not in good repair. One in particular in the *bustee* behind Park Street Lane was in a bad state of repair when I inspected it. The floor is completely broken up. Most of those I have seen are in fairly decent repair.

(7) *Q.*—Are the flushing arrangements adequate, and if not, what improvements are needed? *A.*—The flushing arrangements are fairly good.

(8) *Q.*—Are the depôts offensive? *A.*—The smell is bad.

(9) *Q.*—Do people complain of them? *A.*—People in the neighbourhood complain of them.

(10) *Q.*—Is difficulty found in getting sites? *A.*—The selection of sites is made by the Commissioners, and I believe it is most difficult to get suitable sites.

(11) *Q.*—Are they, in your opinion, a danger to the health of the neighbourhood? *A.*—I do not think they are likely to improve the health of the neighbourhood.

Q. (*By Mr. Playfair*).—Take, for instance, the Circular Road depôt. There is a large hole which allows the foul air to rise. Do you consider that the depôts are on the most approved pattern? *A.*—I do not think they are of a good pattern. I think they can all be substantially improved. The only flushing arrangements are taps.

Q.—Do they ever empty the buckets into the public latrines? *A.*—I am not aware that that is done, but we get complaints of buckets being emptied into other people's latrines and into drains, *e.g.*, Comedan Bagan Road.

Detailed Proceedings of the Meeting of the Medical Board, held on Monday, the 7th December 1896.

Dr. Banks, on special duty as Chief Superintendent of Conservancy to the Corporation of Calcutta, whose examination was continued, gave the following evidence:—

III A.—Night-soil-Depôts—

Q. (*By the President*).—What is your opinion as to the danger to the health of the neighbourhood from the existence of these night-soil depôts? *A.*—I understand they have no appreciable effect on vital statistics, but I consider they must be deleterious to health.

Q.—Is it possible to replace them? *A.*—You might replace them, but the difficulty is to get sites elsewhere. You must leave these depôts until all the latrines are connected with the sewers. Of two which I inspected, one at 8, Kalakar Street, and the other at 75, Jaun Bazar Street, are very objectionable. (See report of 4th December 1896). The former is situated amidst high dwelling-houses, and the latter near a chapel and two large public school buildings. Those at 161, Upper Chitpur Road, 81, Grey Street, 86, Wellesley Street, and 161, Mahomed Crescent's 2nd Lane, are frequently complained of.

Q.—You stated that the total number of private privies was 30,970. I see the Commission of 1885 state the full number to be 31,970. How do you account for such a large increase in so short a time? *A.*—I can readily believe that they have so increased. Privies are being constructed in large numbers all over the town; and the number of prives in the added areas is included in the total number.

IV.—Disposal of House Refuse.

(1) *Q.*—Is section IV of the Sanitary Officer's report borne out by your personal experience? *A.*—It is quite in accordance with my experience.

(2) *Q.*—Is not the pollution of the soil due to some extent to house refuse? *A.*—I find the soil to be very much polluted by house refuse.

Q. (*By the President*).—What is the cause of the pollution? *A.*—It is due to the throwing out of household refuse at all hours of the day and night, the discharge of foul water into the streets, the condition of the *kutcha* privies, the passage of urine into surface drains, the droppings of horses, bullocks, and numerous other causes.

(3) *Q.*—What are the fixed hours for putting out house refuse? *A.*—In the Northern Division of the town they have been fixed between midnight and 8 A.M. and between noon and 2 P.M. In the Southern Division the hours vary in different wards. In the suburbs the hours are between midnight and 8 A.M.

Q.—On what principle are the hours fixed? *A.*—I understand the hours have been fixed by the Commissioners to suit the habits of the people.

Q.—Are they satisfactory hours? *A.*—In my opinion the hours are most unsatisfactory.

Q.—What arrangements do you propose? *A.*—I do not think any refuse should be thrown out between the hours of 6 A.M. and 9 P.M. In other words, the hours for throwing out refuse should be between 9 P.M and 6 A.M.

Q.—What is to become of the remains of meals during the whole day? *A.*—They ought to be put into proper receptacles which can be kept in the compounds or the courtyards of houses, or more municipal dust-bins might be provided.

Q.—Do not you think there would be some danger to the health of the inmates by so doing? *A.*—I do not think there would be any danger to health from so doing for such a short time.

Q.—Of what does domestic refuse consist? *A.*—I suppose it consists of vegetable matter and the sweepings of the houses chiefly. Of course trade refuse and the refuse from manufactories is also thrown out. The nuisance is so extensive that it is absurd to quote instances. There are hundreds of instances every day; refuse is even thrown from the tops of houses.

Q.—What are the arrangements for removing refuse? *A.*—There are 1,879 coolies for road-sweeping and busti-cleansing, o r 715, 815, and 349, respectively, for the Northern, the Southern, and the Suburban Divisions. There are 305 carts in the Northern Division, of which 193 are small gowkhana carts, 92 small hired carts, and 20 double gowkhana carts. In the Southern Division there are 168 gowkhana carts, 88 small hired carts, and 35 double gowkhana carts, or altogether 291. In the Suburban area there are 118 small gowkhana carts and 70 small hired carts. The carters attached to the small gowkhana carts, to which no cooly is attached, are municipal servants; the carters themselves take up the refuse and throw it into the cart. The carters attached to the small hired carts are supplied by the contractors, and each of the

carts has a cooly supplied by the contractor. Each double gowkhana cart has a municipal carter and two municipal coolies who are included in the number of conservancy coolies mentioned above. The working of all the carts is supervised by the conservancy officers—the Inspectors and Superintendents. I shall give a statement of establishment as an appendix. I think, however, the above figures are fairly correct.

(4) *Q.*—Is your establishment of men and carts sufficient for the work to be done? *A.*—I think it will be necessary to increase the number of small carts by 25 per cent. I would not suggest any increase in the number of hired carts, but rather the abolition of the system of hiring carts. Contractors are paid Rs. 21-8 per mensem for each cart, and they make perhaps one and rarely two trips in the morning. In my opinion all the carts should belong to the Corporation, and each cart should make three trips a day. The carters and coolies could then be kept under proper control and fined for neglecting their work or refusal to work. At present they strike whenever they like, and are very independent. Thirteen more double gowkhana carts would considerably facilitate scavenging. These are questions for the Commissioners to decide. In my opinion, if municipal carts are supplied, nothing like the proposed increase in the number of carts would be necessary. More trips would be made daily.

Q. (*By Mr. Playfair*).—If there was better supervision, would the hired carts do more work? *A.*—I do not think any amount of supervision would get better work out of them. Hired carts, in my opinion, simply incur needless expenditure.

Q. (*By the President*).—Is the rest of the establishment, with the exception of the small gowkhana carts, sufficient? *A.*—*Thirteen* more double gowkhana carts are required.

Q. (*By Surgeon-Colonel Ross*).—Do you know how many miles of roads there are? *A.*—No, but I shall obtain the information and give it.

Q.—Where do the carts go to? *A.*—To the refuse platforms, refuse ground, and incinerators. There are not enough refuse platforms. At present much time is lost by the carts travelling all the way from the riparian wards 2, 5, and 7 to the Circular Road platforms, a distance of about 2 miles. Another refuse platform is required for these wards at Nimtollah. This would avoid much delay in carting, and also save the cost of extending or increasing the size of the existing platforms.

Q.—Are the platforms not greatly complained of? *A.*—Yes; all the platforms on the Circular Road are complained of. The question of improving platforms Nos. 2 and 4 is in abeyance, though the plans are ready, pending the final decision *re* the proposal to shift the railway lines to Canal West Road or to incinerators.

Q. (*By the President*.—I understand that a large number of carts get detained at the platforms? *A.*—Yes, they are detained for a long time.

Q.—Would it be possible to utilise the canal for the purpose of carrying the rubbish? *A.*—I am not in a position to express an opinion on that point. I believe much of the delay is due to the fact that there are not sufficient waggons. Mr. Cotton's calculation (when he was Chairman of the Corporation) was that 65 more waggons were required. The number at present available is about 100 daily. The railway is worked by the Corporation under the Engineering Department.

Q. (*By the President*).—I understand that the substance of your experience under this head of the disposal of refuse is that the system of throwing out the rubbish on the streets is defective, that the cart establishment is insufficient, that the platform arrangements are bad, and that there is not enough rolling-stock on the railway? *A.*—Yes.

Q. (*By the President*).—Is the inefficiency in any way due to the badness of the railway? *A.*—I cannot say. The railway will not admit of higher speed on account of the trespass of persons living in areas through which the railway passes. If there were more waggons, I think the speed might be considered sufficient.

Q. (*By Mr. Playfair*).—What is your opinion about road-scraping? *A.*—The roads do not seem to be scraped at all. When they do scrape the roads, the Conservancy Department receives no notice; hence the scrapings are not removed at once. The Road Department scrapes the streets, and the Conservancy Department removes the scrapings. There is no doubt that a great deal more work could be done if the Engineering and the Health Departments worked amicably and harmoniously together. I am afraid small differences of opinion occur occasionally as to responsibility.

Q.—Would gangs of boys be of use for road scrapings and horse droppings? *A.*—Yes. There are some coolies for collecting horse droppings, but very few.

Q.—I suppose it may be taken as a fact that there are more horse droppings here in the roads than in English towns? *A.*—Yes, very much more in narrow streets. Scavenging goes on in English towns all day; but here you could not possibly take municipal carts into Burra Bazar at any time except early in the morning for scavenging purposes.

Q. (*By the President*).—What is the distribution of work between the Health Department and the Engineer's Department with regard to the cleaning of the streets? *A.*—The Road Department has to scrape the roads and deposit the scrapings on the street sides, and the scrapings have to be removed by the Conservancy Department. The Conservancy Department is supposed to flush and cleanse the surface drains, sweep the streets, clean the gully-pits, and flush the gully-pits after they have been cleaned. The Road Department is responsible for the cleaning of the sewers. The Conservancy Department picks up horse droppings.

Q. (*By Mr. Playfair*).—You say that one department scrapes the road and another department removes the scrapings. How are the horse droppings disposed of? *A.*—They

are collected in pans and thrown into carts which are taken to the refuse platforms. The Road Department scrapes the roads and heaps the mud on the sides of the road.

Q. (*By Surgeon-Colonel Ross*).—They water the roads before they remove the horse droppings? *A.*—Yes, there is no doubt that is often done.

Q.—Who does the watering of the streets? *A.*—It is under the Engineering Department.

Q. (*By Mr. Glass*).—Do you think it would facilitate matters if the whole operation, the sweeping and scraping of the streets and the removing of them, were done by one department? *A.*—Yes, I do. The establishment of coolies under the Engineer should be handed over to the Conservancy Department.

Q. (*By Mr. Playfair*).—Is this work sufficiently important to be made independent and constituted into a department by itself—I mean the entire cleansing of the streets, the removal of the sweepings and refuse, and the watering? *A.*—If you constitute another department, you will have to appoint other supervisors.

Q. (*By the President*).—I understand Mr. Playfair's question to be whether the *whole* of the conservancy should not form a separate department from those of the Engineer and the Health Officer, under a separate Superintendent directly subordinate to the Chairman. *A.*—The Superintendent of such a department should of course be subordinate to the Chairman, but he should certainly be subordinate to the Health Officer, to whom he should also be responsible. I think the Superintendent of Conservancy should be responsible to the Health Officer and the Health Officer to the Chairman.

Q.—What would be under such a Conservancy Superintendent? *A.*—Practically the whole of the conservancy. The Superintendent would practically be an Assistant Health Officer (Conservancy Branch), or Chief Superintendent or anything else the Commissioners may wish to call him. But the Health Officer should be responsible for the whole thing. To my mind there should be no question about that.

Q. (*By Mr. Glass*).—Suppose you have two separate establishments for conservancy under the Health Officer and the Engineer, with a staff for supervision, would they not be likely to get mixed? *A.*—I think there are quite enough Inspectors, and the work of the two departments overlaps too much already.

Q. (*By Mr. Playfair*).—Before Dr. Simpson took over the Conservancy, was it under the engineer or under a separate officer? *A.*—I do not know.

V.—Surface drains.

(1) *Q.*—Is Section III of the Sanitary Officer's report borne out by your personal experience? *A.*—It is quite correct. The drains are badly aligned and out of repair, and privies drain into them. Drains are used as latrines in many instances. (See report, dated 24th November 1896)

(2) *Q.*—Have you any suggestions to offer for remedying this state of things? *A.*—I would suggest that all the surface drains be replaced by kerb and channel stones. Surface drains are generally in a broken condition, and the contents cannot be got rid of. In deep *kutcha* drains there is a large amount of filth. Surface drains are supposed to be *pucka*, but there are lots of *kutcha* drains which are supposed to be surface drains. In Banstola and Burtola Streets the surface drains are in a dilapidated condition. Surface drains ought to be made of stone. No surface drains should be plastered with cement.

Q. (*By Mr. Playfair*).—Would it not be expensive to have all the surface drains made of stone? *A.*—Yes, it would; but in the long run they would be cheaper.

Q.—Could you get sufficient falls? *A.*—Yes, proper falls, as a rule, can be obtained for surface drains. In Banstola and Burtola the drains have become cesspools and hollows through sinking of, and damage to, the stones of which they are constructed.

Q. In Zig-Zag Lane there is no drain at all? *A.*—There is no surface drain at all.

Q.—Is that the case in the majority of lanes? *A.*—Yes, in the narrow lanes. In Burra Bazar you have some very narrow lanes between houses with excellent *pucka* drains, which, however, are obstructed by rubbish. Some of course are in a bad condition. Pipes from the house lead into them, but the pipes are broken and disconnected in most cases.

Q.—Is the landlord or the householder bound to have surface drains round his house? *A.*—If he has house-pipes, he ought to have surface drains in order to carry away refuse liquid matter. The drains to which I refer now are in narrow passages between blocks of, or behind, houses.

Q. (*By Surgeon-Captain Dyson*).—Whose property are these drains? *A.*—They are private property. We can call upon the owners to put them in order.

(3) *Q.* (*By the President*).—Is the law on the subject of private drains (sections 287) and 385) sufficient; and how does it work? *A.*—I am not in a position to say how the law works. I cannot call to recollection just now any instance where the law has been applied during my incumbency, but I believe it is frequently applied. I understand that, when the law is applied, the owner carries out the order himself.

Q. (*By the President*).—Are the drains of which you speak in Banstola and Burtola made of stone? *A.*—Yes, they are made of stone; and all the surface drains in the main streets belonging to the Corporation are made of stone.

Q. (*By Mr. Playfair*).—Have there not been complaints as to the difficulty of getting falls in connection with the surface drain system? *A.*—I believe there have been difficulties in many places to get proper falls. The Municipality keeps a staff of coolies to clean the drains in such instances.

Q. (*By the President*).—If you had sufficient falls and proper drains you could dispense with this establishment? *A.*—Yes, to some extent, perhaps.

VI.—Sanitary condition of Courtyards.

(1) *Q.*—Is Section V of the Sanitary Officer's report borne out by your personal experience, and can you quote instances? *A.*—I am in a position to say that the report is correct. Notable instances will be found regarding this in my report of the 23rd October 1896, regarding 201, Harrison Road; in report of 8th October regarding 13, Doyalnath Mitter's Street; in report of 7th November regarding 7, Khelat Chunder Ghose's Street; in report of 8th and 28th November regarding 81, Burtola Street, and in report of 29th November regarding 108, Jaun Bazar Street. These are a few of the many instances I could give.

(2) *Q.*—Do owners of insanitary premises bring their defects to the notice of the Health Department? *A.*—Owners do not, but occupiers occasionally bring defects of that kind to notice; especially, so far as I have experience, where they wish to have their leases cancelled.

(3) *Q.*—Do the inspecting staff discover such defects and bring them to notice? *A.*—It is only when Conservancy Inspectors are invited into any house to inspect privy sites, or when complaints are made by the neighbours, that defects come to notice. Foul drains and obstructed drains are also brought to notice by the overflow of foul liquid into side drains or streets. The Medical Inspectors, moreover, bring numerous defects to notice when enquiring into cases of cholera, small-pox, or other epidemic diseases.

Q. (*By Surgeon-Captain Dyson*).—Can you get admission to these houses readily? *A.*—There are houses into which I get ready admittance; for example, lodging-houses. I have found that politeness readily gains admission into private houses even.

Q.—Do you think the courtyards of private houses are in the same condition? *A.*—I think the courtyards of some of these are very bad. I have found the courtyards of the houses of complainants to be much worse than those of the houses regarding which they have complained.

(4) *Q.* (*By the President*).—What staff have you for inspecting compounds and courtyards? Have you any special staff for this purpose? *A.*—There is no staff except that under the Engineer, who has a house drainage department with a Superintendent and several Inspectors, whose duty it is to make house inspection of drains, gully-pit connections, &c., and to remedy defects.

Q.—Did not you find some one's courtyard chockful of night-soil? *A.*—Yes; house-refuse and night-soil. That was the case in 201, Harrison Road, from which 25 cartloads of refuse, including the sweepings of rooms, vegetable matter, and night-soil were removed. It was a mixture of filth.

Q. (*By Mr. Playfair*).—Is the system of inspection in Glasgow very good? *A.*—Yes, it is very good indeed. I cannot tell whether it has a separate establishment. The Health Department in Calcutta has no special staff for the purpose of inspecting compounds and courtyards

Q.—At home, houses have got what are called cesspools, which are cleaned out periodically. Are these inspected at Home regularly? *A.*—I am not aware of the existence of cesspools in Glasgow.

Q. (*By Surgeon-Captain Dyson*).—Do the Engineering Department ever report as to the condition of courtyards? *A.*—It would help very materially if they would report to us, but they do not.

(6) *Q.*—Is the law on the subject sufficient? Do you consider sections 317 and 318 sufficient, and how has it been working? *A.*—I think the law is sufficient. It has been working specially well during the past two months, ever since the employment of the extra establishment of coolies.

Q. (*By Mr. Playfair*).—Suppose I wrote to the Health Officer and asked him to have my house and compound inspected from a sanitary point of view, would he do it? *A.*—At the present time I should do it, or ask the Superintendent of the division or the Inspector of the ward to do it, and it would be done.

Q.—How many Medical Inspectors are there? *A.*—There are five permanent Medical Inspectors and six temporary. They go about enquiring into cases of small-pox, cholera, &c., and while performing that duty they take notice of any sanitary defects, which they report to the Health Department, and then notices are issued to remove the defects within a certain number of hours or days. They also disinfect premises.

Q.—Suppose, owing to the proximity of the plague, and that I believe the sanitary arrangements in my house are not good, I write to the Health Officer to inspect and report upon payment of a fee. Have you a staff who would do it and tell me what is to be done, and when it is done, will see that it has been done well? *A.*—The Superintendents are considered sufficient for this purpose. The Conservancy Inspectors also report upon such defects. If the case was a very urgent one, the Health Officer himself would make the inspection. If it was a case which required a further opinion from an engineering point of view, there was the Engineer's Department to fall back upon, and the Superintendent of the division and the House-drainage Superintendent would report after personal inspection. There is no special staff such as is referred to.

Q. (*By the President*).—Is it the duty of the Medical Inspectors to report defects of this nature? *A.*—The Medical Inspectors have nothing to do with conservancy; but when there is an epidemic, they are expected to take notice of sanitary defects which requre notice by the Conservancy Department.

Q.—What is the pay of the Conservancy Inspectors? *A.*—From Rs. 120 to Rs. 210. Most of them draw Rs. 120.

Q.—What class of people are they? *A.*—Most of them are natives. There is one Jew, one Parsi, and a few Eurasians.

Q.—What is the pay of the Medical Inspectors? *A.* I think they get Rs. 120; they have the qualifications of Assistant Surgeons.

Q. (*By Surgeon-Captain Dyson.*)—Have the Conservancy Inspectors any qualifications; what previous record or knowledge of conservancy have they? *A.*—They have no special qualifications.

Q. (*By Mr. Glass*).—You say that sections 317 and 318 have been working well during the last two months. Tell us what happens as a typical case? *A.*—Under sections 317 and 318 houses are inspected when permission is given and dealt with as is necessary. Under section 302, for instance, there is a penalty for allowing the water of any sink, sewer, or offensive matter to flow, run, drain or be thrown on streets or into surface drains; and under section 307 there is a penalty for keeping any offensive matter in any house or land for more than 24 hours otherwise than in a proper receptacle, or for suffering such receptacle to be in a filthy or noxious state. It is the order of the Health Officer that no prosecution shall take place without first giving warning notices. If no action is taken, then the matter is referred to the Health Office, and prosecution is instituted. The parties, as a rule, take early action themselves; they clean their drains and white-wash their houses and premises. We have had some difficulty in this matter occasionally. The people sometimes shut their doors. In such cases you may white-wash the outside of their houses and clean their drains and privies, but you cannot enter the house without the help of section 398.

Q. (*By the President.*)—In your opinion generally does the law enable you to deal effectually with courtyards and premises? *A.*—Yes, because the people are amenable to notice as a rule. At first the work was done departmentally, but when the parties concerned found bills being presented, they began to do the work themselves.

VII.—Wells in Courtyards.

(1) *Q.*—Have you come across many wells so situatsd that their contents must be contaminated by percolation from dangerous surroundings? *A*—Yes; wells in courtyards are very numerous and liable to contamination from their proximity to privies. The water is said not to be used for drinking purposes. (See report dated 7th December 1896.)

Q. (*By Surgeon-Colonel Ross*).—What is the depth of the water from the surface? *A.*—Ten or 12 feet.

Q.—Is there a rise in the rains? *A.*—I cannot say.

Q. (*By Mr. Playfair*).—Does the water rise with the tide? *A.*—That I cannot answer. I have seen lots of these wells. This morning I inspected No. 3, Luckhynarain Mukerjee's Lane, in which there were two privies and two wells. One of wells was completely empty: it appeared to be about 20 feet deep, but in the wells close by there was water, and the people were drawing water from it. I saw numerous other wells within 6 feet of privies, and one well 1 foot from a privy. (See report dated 7th December.

Q. (*By the President.*)—Is it necessary to take action to fill up these wells? *A.*—I think all these wells should be filled up

Q. (*By Surgeon Colonel Ross.*)—Have you got a good water-supply? *A.*—A very good water-supply. If there was a constant water-supply sufficient to deal with fires which might break out, there would be no difficulty in getting the people to fill up the wells. The Health Officer was systematically filling up all the wells, when a resolution was passed that none of the wells should be filled up until the water in them was analysed. This crippled the action of the Health Officer considerably.

Q.—Is the drinking water-supply intermittent or constant? *A.*—It is intermittent. It is shut off during certain hours of the day. Personally I do not think there is any kind of water which poor natives will not drink. If they can get any kind of water at hand, they will not go a hundred yards to get it from the street hydrants.

Q. (*By the President*).—Would it be a hardship to the people to fill up these wells? *A.*—I think it would be a great blessing, unless there is anything in the excuse as to the necessity of having wells to extinguish fires. If the water-supply were constant, there could be no hardship in filling up to the wells.

VIII.—Cow-sheds and stables.

(1) *Q.*—Is the section on this subject in the Sanitary Officer's report borne out by your personal experience? Can you quote similar instances? *A.*—Yes; but I do not think the report is sufficiently strong. The condition of the cow-sheds, especially in added areas of wards 1, 3, 4, & 9, is really worse than is there described. It is something terrible. The instances which I have recorded are to be found in my reports, dated the 26th October 1896, the 12th and the 29th November 1896. (Dr. Banks here read an extract from his 8th report.)

(2) *Q.*—What are the arrangements for cleaning these places? *A.*—The owners are supposed to keep them clean; otherwise they are dealt with under section 307 for keeping offensive matter for more than 24 hours otherwise than in a proper receptacle. The conservancy establishment is supposed to remove stable litter and cow-dung, but the arrangements are absolutely inadequate,—*vide* my reports of the 12th and 23rd November 1896.

Q. (*By the President*).—Has section 286 been applied? *A.*—Yes, that is the section chiefly applied.

Q.—If that section is applied, how is it that stables and cow-sheds are not in accordance with its provisions? *A.*—I believe it is due to laxity in serving signed notices. I think the section has been applied chiefly to the case of privies. In some of my reports I have given cases in which cow-sheds have been improved very considerably. (See report dated 12th November 1896).

Q.—What happens when you issue notice? *A.*—The notice states what is to be done. Notices have been signed, but have not been served; the Conservancy Inspectors delay serving them. There is a want of discipline in the matter of serving notices. I do not think it is altogether the condition of these places themselves, but the surroundings that are so objectionable. Cow-sheds simply float in cows' urine. The Municipality have not anything like enough carts for removing urine. They have altogether 22 iron carts for removing foul liquid. In the whole of the Southern Division there are three. It is the business of the Conservancy Department to remove urine; they are supposed to remove and empty it into the sewers, but instead of doing so they throw it into drains. All the drains around cow-sheds in added areas are filled with urine. The cow-dung, in the great majority of cases, is made into cakes and used as fuel.

Q. (*By Mr. Playfair*).—Do they not make any use of the urine? *A.*—I cannot say.

Q.—Are cattle stalled and fattened in Calcutta for slaughtering purpose? *A.*—I do not know.

Q.—Are they stalled on the system done at home? *A.*—I cannot give any information on that point. All cows which give milk are kept in stalls

Q. (*By the President*).—I gather from your opinion generally that the law is sufficient, but it is not worked sufficiently? *A.*—Yes.

Q. (*By Mr. Playfair*).—Are these cow-houses generally situated in *bustee* land? *A.*—Not necessarily.

Q.—Are they on the ground floor of dwelling-houses? *A.*—Gowkhanas are situated in the same compound as dwelling-houses. The owners do not, as a rule, live above them. Stables are often in the ground floors of dwelling-houses.

Q. (*By Surgeon-Captain Dyson*).—Are there not instances in Burra Bazar in which cows are kept on the ground floors of dwelling-houses? *A.*—Those are cows belonging to private individuals. In many private houses one or two milch cows are kept.

Q. (*By the President*).—Do you consider the suggestion to remove cow-houses outside the town workable? *A.*—In my opinion they ought not to be kept in the town. Dairies might be started outside the town.

Q. (*By Mr. Playfair.*)—Have you been through the part of Calcutta past the General Hospital, where it is proposed to make a new road. Have you seen the state of the *bustee* lands there? *A.*—No, I have not inspected that locality.

IX.—Gully-pits.

(1) *Q.*—How many are there and what establishment is there for cleansing them? *A.*—There are 6,919 gully-pits, or, roughly speaking, 7,000, of which 135 in the Suburban Division are cleansed by the Engineering Department. The establishment for dealing with the gully-pits in the Northern and Southern Divisions consists of 63 coolies, 65 boys and 93 *bhistis*.

Q.—Do you consider this sufficient, and have you any proposals under this head? *A.*—It is not sufficient. There are no carts provided for removing the contents of these gully-pits. The contents are removed by carts reserved for conservancy purposes. In my opinion the establishment of boys and coolies should be doubled, and for every boy one cart should be specially set apart for this work, or fewer carts might suffice if the boys work in consecutive order daily.

Q. (*By Mr. Playfair*).—You made a report that 300 more coolies and boys are required? *A.*—That was a suggestion made shortly after I assumed charge of my present duties, in consideration of the condition of gully-pits at the time. About 2,000 have been cleaned since.

X.—Pollution of the subsoil.

Q.—In what part of the town is the subsoil mud polluted in your opinion? *A.*—I am not aware that the subsoil has been analysed, nor have I seen cuttings to show the depth of pollution. I believe pollution is more the rule than the exception. It is caused by the soakage of privy contents; by promiscuous defœcation and urination, horse-droppings, the discharge of foul water into streets at all hours, house refuse, cow-shed and stable refuse, and by the fact that the streets are not scraped properly. The area in which the pollution is greatest is the added portions of wards 1, 3, 4, and 9. The subsoil in wards 5 and 8, and in parts of these amalgamated areas, is completely polluted; and the subsoil in portions of wards 7, 6, 9, 13, 14, 15, and in all portions of wards 19 to 25, is badly polluted.

The shortest answer to the question is that the whole of the subsoil is polluted; but there are wards which are very badly polluted.

Q. (*By Mr. Playfair*).—You have said that you do not know that an analysis has been made? *A.*—I know that immediately under the surface it is polluted; and there is no doubt that under stables and cow-sheds the subsoil is entirely soaked with foul matter. It is absolutely impossible to avoid pollution.

XI.—Establishments.

(1) *Q.*—Is section X of the Sanitary Officer's report borne out by your personal experience? *A.*—Yes.

Q.—Will you put in a statement as to the strength of the establishments? *A.*—We have discussed the establishments under various heads. I have shown where they were deficient. I will submit a statement of the existing establishment.

Q.—Do you find the working staff strong enough? *A.*—It is not sufficiently strong in my opinion, and it is not well enough paid. For instance, gully-pit boys get Rs. 3-4 a month, which I do not think is sufficient for the description of work they perform. Street sweepers get Rs. 5-8; I do not think that enough.

Q. (*By Mr. Glass*).—Upon what are you making your comparison? *A.*—They can get better pay outside the Municipality. By giving them so little pay, fines cannot be inflicted for neglect of duty or other misconduct. Privy mehters get Rs. 8; they are the best paid of all; the pay is sufficient, and I would not propose an increase. The mehters attached to public latrines also get Rs. 8. *Bustee* dhangars get Rs. 5-8; that is not enough.

Q. (*By Mr. Playfair*).—The dhangars get Rs. 5-8, but do not work at all in the afternoon? *A.*—They do not work in the afternoon so far as I am aware.

Q.—Do they not get paid by some other department for work done out of hours? *A.*—I believe not; they may perhaps go to the square mile and get work from the contractor there.

Q. (*By the President*).—Is the supervising staff strong enough, or too strong? *A.*—I think there are too many peons; I think there are enough Superintendents and Conservancy Inspectors.

Q.—Have any of them any sanitary or engineering qualifications? *A.*—The Superintendent of the Northern Division, Babu M. M. Ghose, has a Surveyor's certificate, which he obtained from the Calcutta University, and has been in this Department 13 years. He was in the Engineering Department a portion of that time, and is, in my opinion, a very good Superintendent. The Superintendent in the Suburban area, Mr. Vincent, has been 16 years in the Corporation, and for 7 years he was in the Engineering Department. I think both these men, if they exercised firmer control over their inspectors, would be as good men as it is possible to get. Mr. Martindale, the other Superintendent, has been 6 or 7 years in the service. I am not aware that he has any sanitary or engineering qualifications, but so far he has tried to do his best. The Medical Inspectors are Assistant Surgeons

Q. (*By Mr. Playfair*).—Have the Sanitary Inspectors at Home any qualifications? *A.*—They pass a very severe sanitary examination, and are paid about £ 200 or so yearly, so far as I know.

Q. (*By Surgeon-Captain Dyson*).—Do you find that any of the Superintendents or Inspectors are of too high caste and refuse to go into privies to inspect? *A.*—Yes, I have found Inspectors so in some instances, but not Superintendents. Some of the Inspectors reluctantly open a privy door.

Q.—Have any of the Inspectors engineering qualifications? *A.*—None of the Conservancy Inspectors have any engineering qualifications.

Q. (*By the President*).—Generally, what do you think of the sanitary condition of the *bustees*? *A.*—All the *bustees* I have seen are foul, unhealthy, and insanitary.

Q.—Is the law for dealing with *bustees* in your opinion sufficient? *A.*—My attention has not been specially directed to it

Q. (*By Mr. Playfair*).—On the 27th October 1896, in your report to the Health Officer of Calcutta, after enumerating numerous defects, you say:—"These constitute, as far as I have been able to form an opinion, the most urgent and important requirements, most of which have already been brought to notice by yourself, and regarding which reference might be made to the body of literature filed in the Health Department." You confirm that statement? *A.*—Yes, I confirm that statement. I have seen the papers myself.

Q. (*By Surgeon-Captain Dyson*).—Did you do anything in reference to the practice of drying sawdust by spreading it on the roads, and, when dry, keeping ice in it again? *A.*—I have not noticed it. I shall make enquiries.

Q. (*By the President*).—What ought to be done to put the *bustees* into order? *A.*—The drains should first of all be dealt with; the privies should be made *pucka* and improved. Most *bustee* drains at present are *kutcha* and full of a stagnant liquid from the privies and houses. I would strongly recommend the introduction of Donaldson's latrines. And as to roads, they should be at least 20 or 30 feet wide, or as wide as you can get them. Tanks should be filled up, and there should be an efficient supply of water. There should also be bathing platforms.

Q. (*By Surgeon-Captain Dyson*).—Do you think *bustee* houses are nicely built and in good order? *A.*—They are neither well built nor in good order.

Q. (*By Surgeon-Colonel Ross*).—Would it not be better to remove the present *bustee* houses and have proper lodging-houses? *A.*—Yes, certainly.

Q. (*By the President*).—Turning from *bustees* to the *pucka* houses in Marwaritola, do you think their insanitary condition is largely due to their construction? *A.*—Most decidedly, and to the sites on which they are constructed. They might be improved by stringent building regulations. I most certainly think so.

Q. (*By Mr. Playfair.*)—You said previously that they are faultily constructed as well as overcrowded? *A.*—Yes, I said so.

Q.—Do you consider the native town of Calcutta well and sufficiently lighted at night? *A.*—I have not paid any particular attention to lighting.

Q.—As a consequence of bad lighting, do not the people make a mess all over public places? *A.*—Yes, but they do the same in broad daylight; and so far as urination is concerned, it is a very common occurrence in public places.

Q.—You do not think that if the place was better lighted, it would be kept cleaner? *A.*—I cannot say.

Dr. Banks' Reports on the Sanitation of Calcutta referred to in his evidence.

Report, dated 25th October 1896.

1. Tiretta Bazar Street is covered with mud. The ground surrounding the gully-pit at No. 22 should be repaired without delay. The street should receive more attention from the sweepers' establishment.

2. Complying with the report of Mr. E. A. Cohen, living at No. 20, I inspected his privy accommodation. The two privies attached to this house are situated off a narrow, dark, unventilated entrance. Light is excluded from them at the back by the smallness of the openings in the wall and the presence of a bustee, which is separated from it by a lane 4 feet broad. One of these privies, I am told, is used by about 300 coolies daily. The darkness is so intense that this filthy spot could only be inspected with the help of a lantern. I do not envy the mehter's job. It is my opinion that mehters should not be allowed to enter the premises of such a terribly foul place. In the second privy vault a large earthenware *gumla* is supplied to collect the *dejecta* of the inmates which fall a distance of 8 feet from the privy above. Through the roof of this vault passes an iron pipe which discharges the urine on to the floor. Both shaft and pipe were working during my inspection, and we had to wait patiently until the privy upstairs was vacated for admission to see its condition.

A new sullage pipe it appears was introduced in the previous day. The floor surrounding the pipe was broken, with the result that the urine and fœces will continue to soak into the roof and wall until the breach is repaired.

The unclean *gumlas*, floors and wall, thickly coated with human ordure, and saturated with urine, the stench, the absence of light and ventilation, combine to produce a condition of affairs difficult to imagine.

It is most desirable that those privies should be connected with the sewers, ventilated by large openings in the wall, and tubes carried above the roof of the house. The floor should be dug up and the defiled earth removed.

3. *Chitpur Road.*—The gully-pits in Chitpur and the drains in the narrow lane running into the street across the footpaths, containing as they do human filth, constitute a nuisance which should receive immediate attention.

4. *Extra establishment.*—Enquired into the distribution of the special gang of coolies in Burra Bazar.

36 were employed at 11, Roop Chand Roy's Street.
5 ditto 15, ditto.
2 sardars were in charge.
40 coolies and 2 sardars were employed at 10, Sombhu Nath Mullick's Street.
6 bhistees were standing idle
28 coolies, 1 sardar and 3 bhistees were employed at a lane between No. 51 and No. 52, Cotton Street.
1 sardar.
3 bhistees.
1 peon in charge of office.
1 ditto diary.

5. *No. 201, Harrison Road.*—Yesterday 67 mehters belonging to the ordinary mehter establishment were employed in the morning cleaning the now famous privy. Sixty-seven bucketsful of night-soil were removed. The explanation given by Mr. Wilson of his statement yesterd ay, that it had been completely emptied, is that he relied on the word of the mate. Found 28 mehters at work this morning at 7 A.M. Twenty-eight more bucketsful having been removed. Mr. Wilson states that there are tons of night-soil still there. I have requested him to give me a correct statement of the contents. The drains surrounding this privy vault were stripped yesterday and found to be totally obstructed.

6. With reference to the plan submitted by the owner of cattle, I inspected the site of the proposed privy accommodation and made the following note:—

"My order on the subject will be given when the vast accumulrtion of rubbish lying in the lane and elsewhere has been removed."

7. Witnessed the cleansing of a gully-pit in front of No. 17, Harrison Road. The boy in the pit was imbedded in silt up to the hips. When the work was commenced at 6 A.M., the silt reached the top of the dip stone

One cart-load had been removed, and a second cart was being filled. Hour 7-15 A.M.

8. With reference to the complaint of Babu Debendro Nath Ghose of No. 14A, Ramanath Mozumdar's Street, inspected the privy and drain attached to his house at the back. The privy is a drop one 12 feet high. It is evident that this privy is absolutely neglected by the mehters. The house drain is broken. This should be brought to the notice of the Drainage Department. Behind this block of houses there are four drop latrines, all in a foul condition.

9. Catchment drains should be constructed in connection with the stable belonging to Kristo Dhon Mullick at No. 1. The floor should be made pucka. His carriages should be washed inside his own premises and not in the street.

10. The stable belonging to Taruk Moitro at No. 4 should be dealt with similarly. Mr. Dadouse is in charge of this division. His attention is invited to the above remarks.

Suggestions.

1. I am of opinion that small shovels with landles attached should be used by the road scrapers for removing mud instead of the present primitive broken pieces of scrap iron or tin.

2. Mr. Paget, Commissioner of Police, suggests the use of a few *squee gees* for surface drains as an experimental measure.

Re *201, Harrison Road Privies.*

From—W. WILSON, Esq., Inspector, Ward 7,
To—Chief Superintendent, Calcutta Municipal Corporation.

FROM personal inspection and from personal enquiries which I made after leaving you to-day (Sunday), I find that this privy was originally a drop privy, with two seats on the first or ground floor and two seats on the second floor; but now I find that on the roof of the house five extra seats have been made, and I can find no record of the sanction of them, so it stands as follows:—

On the roof of the house	5 seats,
On the 2nd floor	2 seats,
On the ground floor	2 seats,

a total of 9 seats, and if taken in accordance with the rules of the Corporation, *i.e.* 10 men to a seat, that will be 90 persons residing in that house, but no doubt there is more.

The night-soil from these seats falls into a vault below the level of the ground floor of the house, and from which vault connection with the bustee drain has been made (and is opened for your inspection) for the purpose of carrying off the soil, &c., but this having become choked, and no report having been made to Health Department, we were quite ignorant of the fact of the great accumulations.

After removing all I could this morning, on opening the trap-door that had been locked up after the connection had been made, I found that the accumulation of filth, which has actually dried and turned into earth, is impossible to estimate.

Up to date, 27th October 1896, 246 buckets, 346 cubic feet. Three times as much, in my opinion, has still to be removed.
27-10-96. C. B.

Until this place is thoroughly cleared, nothing can be done regarding the opening of the connection of the privy, which must have been connected without proper means of flushing, &c.

Amount of filth removed.

24th October 1896 ... 67 buckets } About 148 cubic feet of filth removed.
25th October 1896 ... 51 Ditto }

This work has been done in addition to the ordinary work of cleansing privies, for which I should recommended them* for extra pay accordingly, and charge the same to the householder.

(* The mehters.)

Report dated the 8th November 1896.

Ward No. 12-7.—The collection of mud at the junction of Fairlie Place and Strand Road should be removed, and the road from this point to Howrah bridge scraped.

Ditto at corner of Harrison Road and Strand.

Ward No. 12.—There are still a few heaps of consolidated rubbish in Strand Road. Mr. Martindale should see that they are removed. I notice a decided improvement.

The surface drain opposite the building occupied by the Worthington Pumping Engine Company is obstructed by refuse thrown down to enable carts to cross the drain, which should be removed. A cast-iron trunk should be provided.

Ward No. 7.—Notice should be issued on Jessop & Co., Limited, to prevent the flow of spill-water on to the foot-path, to remove trade refuse, and clean their premises.

Ward No. 5—No. 13, Doyhata Street.—The lodging-house situated there is perhaps one of the most insanitary I have visited. The privy vault is pitch dark, and the receptacles and gutters choked with human ordure and urine.

The excreta drop from a height of about 12 feet into two narrow masonry troughs, each about 30 feet long and 4 feet wide, one on either side of a narrow passage. These two troughs or reservoirs are connected in the middle by a narrow drain, which is connected with the street sewer. There are no flushing arrangements to carry the filth away All that existed before are out of order.

The building is three-storeyed with, as far as could be ascertained, 21 rooms on each flat. The rooms are all built on the same principle and about the same size, measuring 10 × 15 × 12 feet approximately. The rooms on the south end of the building have windows. All the other rooms are ventilated by doorways only, and where windows exist, they are kept shut for privacy, large blocks of houses extending to within a foot or two of these rooms, except at the south end, which is open.

Numerous different families, their relatives and servants are said to live in this house, and the average number of occupants of a room to be 5 or 6. The verandahs are also used, especially during the night. Cooking is done inside the rooms. I counted 231 pigeon-cots hanging from the walls of the courtyard, varying in size, each containing one or more pigeons, exclusive of their young, which were heard, but not seen.

The latrine, seated for 12, has six compartments on either side of the passage, the space occupied being 30 × 12 × 12 feet, the latter being the entire width. The vault has already been described. Two flushing cisterns, capable of holding 1 cubic foot of water each, are provided; but I am afraid these have been useless for that purpose for a very long time.

There is one urinal on the second floor and another on the third. The floor is broken and soaked with filth, and the body spouts are a serious nuisance

The lower rooms are used as godowns for the storage of piece-goods. The surface drains surrounding these are full of decomposing filth of various sorts.

The condition of the privy vault, the absence of flushing arrangements for the latrines the foul drains, the overcrowding, the noise produced by the multitude of human beings and pigeons, the well in the centre of the courtyard, contaminated by bird droppings, &c., produce a state of affairs which would be hard to beat.

Ward No. 5.—No. 3, Doyha'a Street.—Thirty-two coolies, 4 mehters, 2 bhistis, and 1 sardar were employed this morning for removing filth from this lodging-house. Mr. Smith, the Inspector in charge, informed me that they removed three cartloads of rotten onions and garlic yesterday. The drains were cleaned and flushed, 25 latrines were emptied, and the walls white-washed. This morning the pit attached to this privy and the drain leading to it were full of human excreta. There is no water for flushing, the supply and flushing tanks being out of order.

Every latrine was occupied at the time of my inspection, and crowds waiting their turn outside, which gives a good idea of the demands made on it, and shows the urgent necessity for putting defects right. There are body spouts all over the place and every one is defective.

The result is that the walls and floors are defiled to a terrible extent and the courtyard stinking.

I hope the bills for this have been submitted to owner. What else can be done?

H. C. W.—12-11-96.

The extra gang were well provided with lime and tar. Already a very great improvement has been effected.

Ward No. 5.—No. 81, Burtola.—Four cartloads of rubbish and 10 dead bandicoots were removed from these premises on Friday. I counted four dead rats lying about this morning, and sent one moribund to the laboratory which made no attempt to escape. They all seem to be drowsy and dying. The courtyard is riddled with rat-holes, and I am quite sure if the floor were dug up, a vast deal of corruption would be exposed. The privy attached to this house is a sight worth seeing. Unless it is demolished, I am afraid there will be, sooner or later, a terrible slaughter amongst the inmates of the building, the whole frontage of which is at present propped up with bamboos.

CHAIRMAN—
This house which I inspected this morning is dangerous and unfit for human habitation, and I advise that it should be immediately closed.

W J. S.—9-11-96.

I do not doubt for a moment but these rats are dying from poisoning by sewer gas.

C. B.

HEALTH OFFICER—
You should take action under section 319. It is quicker than 385.

H. C. W.—12-11-96.

DR. BANKS—
Mr. Ghose should apply at once under section 319.

W. J. S.—18-11-96.

The privy itself is so dangerous that the extra gang of coolies refuse to cleanse it.

The approach to it is by a wooden plank stretching from the second floor of the house to the doorstep of the privy, across a heap of house rubbish.

Ward No. 5.—No. 3, Bysack's Lane.—Called to see Babu Lal Behary Bysack *re* his complaint to Chairman about the unwholesome condition of grain, &c., being sold for human consumption, but found this gentleman was not at home. I noticed that the body spout attached to his house does not reach the surface drain. The plinth is soaked with liquid matter of sorts passing through the drain. The Secretary might be asked to direct his attention to the necessity of rectifying the defect.

Secretary for compliance.

H. C. W.—12-11-96.

Copy sent to Babu Lal Behary Bysack.

12-11-96.

River Police-station—Was informed by the officer in charge that a boat arrived from Nadia yesterday with 8 bags of wheat and 43 of gram. Eight bags were unloaded. The boat sank. At ebb-tide the lost bags were recovered and taken to the godown of Babu Kanai Lal Khundi and Ishan Chandra Khundi at 25, Strand Road. I ascertained this to be the address of the Worthington Pumping Engine Company. Mr. Paget's notice will be drawn to this point.

Ward 2.—Inspected ten grain godowns in Dharmahatta Street and saw nothing in them unfit for human consumption. The flour contained in the bags was of good quality and free from musty smell. All the floors are *kutcha* and broken by rats, which infest these places. I notice one large *kutcha* grain godown is under construction. I think it a great pity that permission should be granted to do so, and I further think it high time that the owners of those in existence should be compelled to remove the grain in store and make at least *pucka* floors, if not to provide entire *pucka* buildings, on sanitary principles.

To L. O., who will favour me with his opinion about this.
H. C. W.—12-11-96.

Copy sent.
P. D.—12-11-96.

Ward 6.—In compliance with the wish of Babu H. C. Chatterjee I inspected the surroundings of his house at No. 5-1, Mohendro Gossain's Lane. I find that indiscriminate urination and defœcation take place in the open space close to the house. There is also close by a row of single-storeyed latrines, the use of which is supposed to be abandoned. The condition of these dilapidated latrines shows that they are freely used, but not cleaned. The correspondence on this subject should be put up for my perusal.

Ward 7.—No. 19, Shambazar Street.—There are two drop-privies, back to back, on the ground floor of this house. The entrance to one of them is by a door adjoining the street. This privy has been abandoned. I find that, although not now used, the vault still contains the night-soil deposited therein when it was in use. The entrance to the other is from inside. The vault attached to this is also foul, the drain is obstructed, there is absolutely no ventilation, and the flushing arrangements are inadequate. The smell, as one approaches the site of the latrine, is sickening. Steps should be taken to have the defects remedied without delay.

Ward 8.—82, College Street.—The waste of water inside the compound of this house is most shameful Every cistern is filled to overflowing, tap constantly running, the floor is flooded, the water standing 6 inches deep, and the drain is obstructed. Flushing arrangements of privy all right.

C. BANKS.

SECRETARY—

Please see within and take action and forward to Dr. Banks and extract to L. O.

H. C. W.—12-11-96.

Report dated the 11th November 1896.

Ward 9.—Champatollah *bustee* surface drains should be repaired. They were fairly clean, but might be improved and better flushed.

Inspected several privies. The first privy vault was dark, and had no *gumla*. The floor was fouled. The house to which it is attached is owned by Asakully. Twenty-five persons use it.

The *gumla* of the second showed that the mehter attends to the latrine. The floor is broken and soaked with urine. The surface drain near this spot, which is *pucka* and in good order was being cleansed and flushed.

Question.—How may privies of this kind has any individual mehter to clean in the *bustee* referred to ?

Mr. Martindale promised to supply the information.

The gully-pit in lane opposite No. 99, Champatollah 2nd Lane, was obstructed (temporarily) by rubbish.

Owner of *bustee*, Nogan Chandra Barao, No. 99, Champatollah 2nd Lane, should be addressed on the subject of *bustee* improvements required.

At Nos. 95 and 96, Champatollah Lane, are two privy vaults disused, as the privies are connected. Should be filled up with masonry and the doors removed.

At No. 93 the mehter-service privy was clean.

Ditto at No. 6.

The one attached to house at No. 78 should be demolished and rebuilt on sanitary principles.

At present the mehters cannot clean it properly, and it looks unsafe.

There is no ventilation.

Mehters should not be required to clean such horrible places as the two privies in the Champatollah 2nd Lane at No. 71.

Notice should be issued to have them demolished and Donaldson's latrines introduced Mr. George of ward 9 should not be transferred as recommended by Mr. Martindale until further orders. I am satisfied with his work so far.

Issue.

H. C. W.—16-11-96.

Ward 6.—The public latrine No. 8, Mooktaram Babu's Street, is seated for 16.

The catch-pits and trap are not clean, and appear to be obstructed. The wooden lids are broken. Cast-iron lids should be provided. The walls are in a dangerous state. Estimates, I understand, are being prepared for their repairs. The subject should be hurried. The mehters flush the drains, etc., at present, as there are no flushing arrangements.

Order.

H. C. W.

Copy sent to Assistant Engineer, Drainage.

M. GHOSH.—23-11-96.

This latrine is freely used by the inhabitants, and should, I think, have perfect arrangements for that purpose.

The night-soil depôt attached to it has been abandoned.

Two sickly rats—one from the grain store at No. 14 and another, No. 81, Burtola Street—were sent to Dr. Cunningham. As Dr. Cunningham had enough material of that kind on hand, he sent them to the laboratory at the Health Office, etc.

No. 204, Darmahatta Street.—There is a large grain bazar, called Dalharapati, situated here. It was reported yesterday that dead and dying rats were noticeably numerous. I saw none during my inspection. I understand they come out during the night. The place is completely riddled with holes. Some of the grain sacks are practically buried in the ground.

The owner must remove them.

H. C. W.

Suggestions.—1. No grain should be allowed to remain elsewhere than on a suitable platform (pucka) 3 feet above the ground level.

2. The sacks should be arranged in rows at least 1 foot apart.

3. The floor of every grain store should be made of the best pucka material and kept thoroughly free from dirt of any kind.

4. The walls should either be made of pucka masonry or corrugated iron, and well ventilated.

Excellent suggestions, and they should be embodied in a full note which I fancy Dr. Banks will submit before long.

H. C. W.—16-11-96.

The owners of these markets are sufficiently rich, and could not regard it as a grievance if they were called upon to do so.

No. 31, Free School Street.—I visited this place before. The Young Women's Christian Association rooms are situated here. The complaint is that the latrine drain gets obstructed now and again, giving rise to an escape of sewer gas. The Assistant Engineer caused the drain to be opened. There was no obstruction. The fact is the syphon gets blocked by the quality of the paper used for domestic purposes, and I suggested as mildly and politely as I could the use of something less objectionable, and asked to be informed at once if any further inconvenience was experienced. Although the flushing-arrangements were working well, I am told they sometimes fail.

A fee of one rupee has been charged every week during the hot weather and every fort night during the cold weather for cleaning the latrine and Miss Daw would like to know whether this is a rightful charge.

A report should be awaited. I cannot think this is right.

H. C. W.

Great Eastern Hotel.—The servants' latrines on the lower floor are pitch dark, and the escape of water from the cisterns close by so great as to render an inspection of the premises impossible. Dr. Simpson has promised to inspect these places with me to-morrow.

Report awaited.

H. C. W.—16-11-96.

C. BANKS.—11-11-96.

Report dated the 12th November 1896.

Drove through numerous streets and lanes in wards 5, 7, and 6 early this morning to ascertain whether they were being cleaned. I was satisfied.

I should like to know what owners of stables in Banstollah Gully pay fees for the removal of the stable refuse. I saw one cartload removed from a single stable

I should like also to know how much Whiteaway Laidlaw and Company have paid during the past three months, say, for the removal of trade refuse, to whom, and the time it is removed.

Moydaputti Lane should receive more attention. It is not anything like clean.

Accompanied Babu Nalin Behary Sirkar and Dr. Sen to the following gaukhanas which have been improved :—

Ward 4.—No. 6, Maniktola Road.—This gowkhana has a pucka floor, but the standing space for cows is much too limited. The present drain should either be filled up and a new one constructed, or the manager should be reduced in size. The cesspool attached is too deep. The drain should be connected directly with the sewer. The place holds seven cows. On returning to the gowkhana to take the measurements thereof, I found the milkman, named Chinta, blowing into the vagina of a cow that he had just milked with his mouth applied directly to the parts. Dr. Sen, whose attention I drew to the matter, informed me that this is a punishable offence. Having often heard of *phooka*, but never having seen it done, I was perhaps more interested in the affair than surprised.

Did you prosecute him ?

H. C. W.—19-11 96.

No. 28, Jogeepara.—Owner's name Gopi Hati. This gowkhana contained 32 cows. Measurements approximately 13 × 12 × 9 feet. The ground surrounding the urine receptacle should be paved.

No. 31, Jogeepara.—Owner's name Mohesh Ghosh. Contained 18 cows, 1 buffalo, and 1 buffalo calf. No overcrowding. Standing space insufficient. The urine receptacles are much too large. Situated at the back between this and another filthy gowkhana is a shallow well which should be immediately filled up. No license should be granted until this is done.

Carry out.

H. C. W.

No. 29, Bahar Mirzapur Road.—Owner Haroo Polia. Nothing short of levelling the whole place to the ground will ever improve matters. The filth abounding here is beyond description.

No. 28, Bahar Mirzapur Road.—Owner's name Nepal Ghosh. Nothing short of levelling the whole place to the ground will ever improve matters. The filth abounding here is beyond description.

No. 30, Jogeepara Lane.—Owner's name Mohesh Hati. Nothing short of levelling the whole place to the ground will ever improve matters The filth abounding here is beyond description.

The drain (*kutcha*) between the two last mentioned gowkhanas is filled to overflowing with liquid manure. It is very evident that the urine receptacles are simply emptied by the coolies into this ditch and never removed. Nor am I surprised. Only three liquid manure carts are allowed for the whole of this area. I am almost certain one cart to each gowkhana would be kept hard at work from morning until night to keep such places fairly clean.

It does not pay the Corporation to send liquid manure carts to such places, nor is the object aimed at attained. Every gowkhana-keeper should be compelled to keep his own liquid manure cart and bullocks and his premises thoroughly clean.

No. 1, Ward Institution Lane.—Owner Hari Doali. Pucka and well ventilated.

General remarks on these gowkhanas.

1. There is not anything like sufficient standing floor space in any one of these, and the consequence is the cows have to stand with their spines bent to keep their hind legs out of the drain.
2. I understand this is done so that the excreta of the cows may pass directly into the drain, and not on to the floor, and thus save trouble to the goala servants.
3. There should be an open space all round the buildings of, say, 2 feet, where the wall and roof meet.
4. All the drains are too deep and too narrow.
5. Every well in such premises should be filled up.
6. It would considerably add to the comfort of the cows if more straw were used, sand, or sawdust. At present they slip all over the places.

Ward 3.—No. 16, Goalpara Lane.—Owner's name Kali Backuli. This is certainly the finest cow-shed I have seen in Calcutta, but the floor space, like all the others, is utterly insufficient. The drains are connected directly with the sewers.

C. Banks.—12-11-96.

I should like this to be put up with cow-shed S. C. File.

H. C. W.—19-11-96.

Report dated the 17th November 1896.]

No. 27, Mullick Street.—The owner proposed building a two-storied house, and submitted a plan showing the site of the privy on the second floor. I find that a third storey has been erected, and he now proposes to construct a connected privy on this floor. It is questionable whether water will rise to such a height. The plans are not correct. The matter should be referred to the Engineering Department.

Ward V.—As the result of measures taken yesterday, I found this morning 18 coolies hard at work at 61-1, Banstollah Street at 6-0, and 27 at 60, Banstollah Street. They were employed removing refuse, cleaning drains, and white-washing.

61, Banstollah Street.—Application with plans were submitted by the owner for building an addition to a house already existing. The privy site has to be fixed before operations begin. Bye-laws, I understand, cannot be enforced, as an old building exists in front of this large open space.

61-3, Burtola Street.—A dilapidated building adjoining No. 61 is to be demolished and rebuilt. This neighbourhood is thickly populated, and the open space a great boon to the inhabitants. I should be very sorry indeed to learn that the Commissioners accord their sanction to the construction of any more buildings in this part of the town. This space. if possible, should be kept open.

At the entrance to the courtyard is a receptacle, 6 × 6 × 3 feet, full of sewage matter. The house-pit is obstructed, the body spout is broken in its entire length, and the walls are in a dangerous condition. The Road Department should issue a notice on the owner.

Ward 5.—Between 5 and 6, Khelat Chandra Ghose's Lane, there is a passage 1½ feet wide situated between two blocks of houses two-storeys high.

This space is blocked at both ends by brick walls 10 feet high. The space is full of house refuse, the surface of which is 9 feet above the ground level. The space is 60 feet long. We have thus 1·5 × 60 × 9, or 810 cubic feet of refuse. The only entrance to this space was a door, which was built up thirty years ago.

Directly opposite at No. 10-1, there is a short lane ending in a *cul-de-sac*, at the end of which there is a moderate accumulation of house sullage and vegetable refuse matter. The house-pipe is short of the ground level by 12 feet. The wall underneath is corroded and coated with the discharges from this body spout. The yard gully is choked and stagnant. The private residence of the complainant is in a most foul state. In fact, the defects which he complains of outside pale into insignificance compared with those in his own premises.

The complainant kindly invited us to pass through his courtyard in order to examine the other end of the lane. A notice might be issued on him to pave his cow-shed, provide suitable drainage, improve his privy, and to keep the place clean.

Ward 2.—At 5, Nundoram Sen's Lane, a temporary privy has been sanctioned by the Commissioners. The only place inside the premises of the occupier available for this purpose is practically his doorstep which I regard as objectionable, and I do not think altogether unavoidable.

At present an old dilapidated drop privy in the compound is being used. The privy vault is buried in the refuse which has accumulated and formed quite a hill, 6 feet × 30 × 20, or 3,600 cubic feet. The privy will, unless demolished, collapse one of these days as the walls have been burst up by the jungly trees growing in them. The small hill is used for promiscuous defœcation. Notice should be issued on Babus Dina Nath and Chandra Kanta Mukerji to demolish the privy, build one on approved principles, and to remove the rubbish. If these orders are carried out, it will not be necessary, I think, to have a privy built on the doorstep of any of the occupants of houses situated in this neighbourhood.

Chitpur Road in ward 2 is not cleaned properly. There is room for a vast improvement in the whole length of the road.

Ward V.—Hari Das Sha of 368, Upper Chitpur Road, should be ordered to remove the trade refuse which has accumulated between his own printing establishment and the adjoining house, and informed that bathing platforms have not been constructed to enable him to soak dirty printing paper, &c., in the tanks attached thereto.

Perhaps a fortnight ago I drew attention to the condition of the drain behind the shops of Messrs. Child & Co., tobacconists, and others, which is completely obstructed by the trade refuse of Das & Co., picture framers, and to the condition of the urinal attached to the Parsee Theatre also situated there. I do not wish to receive further complaints about these nuisances, and I hope Mr. Martindale will be good enough to take action at once with reference to my orders in a former report.

No. 42, Burtola.—Kunji Lal Sen, Postal Department, complains about a shopkeeper systematically burning dirty clothes, and the bad smell arising therefrom. The object is to obtain fragments of silver attached to the clothes. The post office is immediately above the shop, which is more like a pigeon cot than a warehouse. I regard the process as a nuisance. Notice should be served on the owner.

C. Banks.

Report dated the 20th November 1896.

Was under the impression that I had an appointment with Mr. Martindale this morning at Dhurrumtollah. He did not turn up. Accompanied Mr. Vincent to enquire into the complaint of 52 persons regarding the drains on the sides of the following streets and lanes, viz.—

Benapukur Road.	Ram Coomar Mukerjee's Street.
Bishtoo Babu's Lane.	Circular Garden Reach Road.
Ashoo Babu's Lane.	Kootri Road.
Shosteetolah Lane.	Nazir Mohamad Ghat Maji's Lane.
Gurbari Road and Lane.	

To attempt a description of the drains complained of would be a mere waste of energy. They are fouled to a terrible degree, and no effort apparently is made to cleanse them.

Portion of Benapukur Lane is *pucka*. The others are, for the most part, broad, deep, and *kutcha*.

Ram Coomar Mukerjee's Street, 2nd Lane, is full of stagnant sewage.

This complaint was received on 3rd November by Inspector Sirish Chandra Pal. As no action was taken, the complainants sent a reminder on 16th November 1896, which was the first time the subject came before the notice of Dr. Simpson or myself. The papers therefore were in the hands of the Inspector for 17 days, and no action was taken.

Head Clerk says it was sent on 30th October.

C. B.

Inspected 14 privies in Gurbari *bustee*. They were all as foul as privies could possibly be, and in no instance was there any sign that the mehters ever go near them. I would

specially draw attention to those attached to the houses of Inis Mir and Najib Mir as excellent examples of the real state of matters everywhere.

The privy attached to the house at 37, Benapukur Road, is used by eight individuals, and the entire quantity, barring soakage into ground, of the waste products of these persons finds its way into the tank at the back of the house through a *kutcha* drain made by the liquid sewage in its flow.

The present incumbent has been in charge since 1st October, and he was unable this morning to cite a single instance of any improvement brought about through the issue of notices and he exhibited a lamentable amount of ignorance regarding the geography of his ward. Inspector Das now in ward 21, was his predecessor, and was in charge for nearly five months.

A reference to the notice register shows the following amongst other facts :—

1. That notices from 792 to 800 are written out, but have not been issued. Some of them were signed by Assistant Superintendent Mukherji on 27th September 1896.
2. From 1st to 31st October not a single notice was applied for nor issued.
3. Of 26 notices applied for during September, 13 only were served, and those not until 15th and 16th November.
4. From 15th July to 20th November, 47 notices were applied for under section 286, but 20 only were served.

During the incumbency of Inspector Pal 11 have been served, and only 4 applied for, that is, from 1st October to 20th November.

Mr. Das was in charge from 12th June till 30th September, and the following are the facts of the case:—

1. Forty-four applications for notices were made during this period, 18 having been served, the last being served on 16th November. Only 7 were served by Das. The 11, therefore, served by Pal were applied for by Das.
2. Action taken since 12th June on notices issued were—one notice cancelled and two privies demolished.

Mr. Wilkinson was in charge during the year from 1st January to 12th June 1896 :—

1. From 13th December 1895 to 10th February, no notice was applied for.
2. Nine notices, from 10th February till 12th June, were applied for. Six were served.

One complied with by owner and one privy demolished departmentally.

This reveals a state of matters which reflects grave discredit on the officer concerned.

I would remark regarding ward 25 that the only instance in which a notice was said by Inspector Pal to have been issued, was regarding a privy in Gurbari Road. The Inspector was asked to show the entry in the register, but could not. In fact, he simply said this notice was served, thinking that no further enquiry would be made.

Remarks.

1. Srish Chandra Pal was transferred from ward 22 to ward 24, because he was incompetent, and from 24 to 25 during a general transfer made by the Superintendent on 1st October, before he went on leave.
2. Surendra Lal Das was sent to ward 16 to relieve Wilkinson, who was suspected of irregular conduct with reference to carters and bulls supplied by Ghassi Jamadar, contractor.

Wilkinson is reported to be useless.

I have no wish to take action in this matter myself. I have put the facts of the case on record, leaving it for Dr. Simpson, or if he thinks it necessary to the Chairman, for orders.

O. Banks.

The 23rd November 1896.

Accompanied by Babu M. M. Ghosh, Superintendent of the Northern Division, attended the muster of wards 4 and 6, and was pleased with the manner in which the attendance was checked. Out of a total establishment in ward 4 of 225 persons, only 6 were absent, and in place of 5 of them substitutes were sent.

In ward 6, out of a total establishment of 244 persons, 6 only were absent, and substitutes were sent in place of all of them. This may be regarded as satisfactory.

In ward 1, the muster was just finished by the Inspector. On examining his books I found that out of a total establishment of 254 persons, 7 only were absent, and substitutes have been sent in place of all of them. One fact was noticed, viz., that most of the absentees were mehters.

Ward 3.—Of 243 persons who constitute the establishment attached to this ward, 17 were absent, of whom 12 provided substitutes. Amongst those who provided substitutes, the following 10 were mehters :—

1. No. 15, whose beat extends from No. 11, Durga Charan Mitra's Street to No. 114, Durga Charan Mitra's Street.
2. No. 32, from No. 15, Musjid Bari Street to No. 159, Musjid Bari Street.
3. No. 42, from No. 3-1, Ramchand Nandi Lane, to No. 15, Ramchand Nandi Lane.

4. No. 48, from No. 35, Hari Ghose's Street, to No. 42-2, Hari Ghose's Street; from No. 31-1, Kasi Nath Bose's Lane, to No. 34-4, Kasi Nath Bose's Lane; from No. 1, Bhim Ghose's Lane, to No. 21, Bhim Ghose's Lane.

5. No. 50, from No. 18, Hari Ghose's Street, to No. 30-1, Hari Ghose's Street.

6. No. 80, from No. 20, Kurballa Tank Lane, to No. 22, Kurballa Tank Lane.

7. No. 102, from No. 45, Simla Road, to No. 48, Simla Road.

8. No. 93, from No. 50, Simla Road, to Nos. 1, 2, and 3, Hazi Jackaria's Lane.

9. Nos. 5 and 6 attached to free latrine, No. 1, Grey Street, the night-soil depôt of which is unfit for use.

Remarks.

1. Inspected not less than 50 privies, not one of which can be properly examined by the officer in charge. The *gumlas* are placed at a great distance from the doors of the privy vault. The doorways are so constructed that the mehters have to crawl on their hands and knees, or even lie down, in order to get at the *gumlas*, and the vaults are so dark that a lighted match reveals nothing but what might be imagined to be an immense cave.

2. A few *gumlas* were hauled out by a mehter in some of the beats abovementioned, and they were either not cleaned at all or only partially, and I am not surprised. I regard it as inhuman treatment that mehters should be compelled to enter the precincts of such poisonous places.

3. The latrines from Nos. 18 to 30, Hari Ghose's Street, had not been cleansed at all, and the substitute was nowhere to be seen. No. 50 should be asked for an explanation and necessary action taken.

4. In all the other beats to which substitutes were sent, I found mehters at work.

5. Peon Aziz (No. 3) does not appear to me to be a fit person for the duties he is expected to perform. He told me a bare-faced lie. I asked him to state whether a certain latrine *gumla* was clean. He said it was. I inspected it and found it full of night-soil.

Dismiss.
W. J. S.—23-11-96.

My objection to this man is that he reluctantly opens the doors even of latrines. Babu M. M. Ghosh tells me that he makes it a point when selecting a peon to choose such men as do not consider themselves above doing this. I trust that he and the other Superintendents will be most particular about this, and get rid of any peons who object.

6. The mehters' beat register is not referred to often enough. I doubt very much whether visits of a detective kind are paid by the Inspectors. If so, I should like to know the results.

A column might be added for Inspector to insert date of particular inspection.
W. J. S.—23-11-96.

7. Beat registers should be kept to show also the extent of street or area for which the road-sweeping coolies and carts are responsible.

Certainly.
W. J. S.—23-11-96.

8. Immediate steps should be taken to have all such latrines, as I inspected this morning, either demolished or improved. Until this is done, the mehter's work will not be done properly.

Yes.
W. J. S.—23-11-96.

9. The *bustee* tank at Kurballa Tank Lane is being filled up with street and stable refuse. This should be stopped.

Call on Superintendent for an explanation, and get Superintendent to take the proper steps for filling up.
W. J. S.—23-11-96.

10. The Inspectors should endeavour to stop the practice of employing substitutes. The substitutes in ward 3 this morning were far too numerous.

Ward I (added area).—Kutcha drains, 9 feet broad by 4 feet deep, extend along both sides of Ultadingi Road. The *bustee* side drain contains a large quantity of decomposing liquid matter with an admixture of solid refuse. Cowdung, urine, and privy washings form the bulk of this material. The drains within the *bustee* are full to overflowing with sullage. The entire area is a perfect lake of sewage.

The conservancy establishment of this area is as follows:—

1 Peon.	4 Hired carts (refuse).
2 Sweepers (road).	2 Liquid manure carts.
10 Ditch coolies.	1 Dome.

34 Mehters.

The mehter establishment is perhaps sufficient, but 2 sweepers and 2 sullage carts are utterly inadequate. The sullage carts could not possibly make any noticeable impression on the amount of liquid filth lying stagnant in the ditches, and I do not believe that an attempt is even made.

I believe a proper establishment was asked for this area more than once, but refused. The papers might be put up.
W. J. S.—23-11-96.

In my proposals, which I hope to bring to the notice of the Chairman *early*, this subject will receive attention.

C. BANKS—23-11-96.

Report dated the 24th November 1896.

Ward 14.—Re complaint of Babu Surendra Nath Banerji in his letter to Dr. Simpson dated 21st November 1896, I inspected what I believe to be the drain referred to. At any rate, it was the only drain I could discover in the locality.

The drain is about 70 yards long, about 8 inches broad, and 14 inches deep, and in a dilapidated condition. Its origin was traced to a small surface drain, which conveys the washings of a primitive *kutcha* latrine situated behind a mud hut in the middle of what, I am told, is called Doctor's Lane *bustee*. It ends in a gully-pit of a kind situated behind a brick wall on the side of Serang's Lane. This drain appeared to me to serve no other purpose than the collection of privy washings, household liquid refuse, and is even resorted to for the purposes of defœcation. The soil along the drain is defiled with night-soil at intervals where space is available for attending to the calls of nature.

Notice might be served to have drain repaired and proper latrines erected.

W. J. S.—24-11-96.

I counted no less than 7 feeder surface drains and 7 privies situated on the sides of the main drain. At the back of the only *pucka* house in this neighbourhood and attached to it is a house-pipe short of the drain by several feet. The foundation of this house near the pipe is completely undermined. The owner, whose name unfortunately I omitted to get, informed me that his family, as a rule, keep well, but occasionally suffer from fever, and I am not surprised.

I may remark that the privies which I inspected were apparently well looked after.

Here, however, is another *bustee* which would be greatly improved by the introduction of Donaldson's latrines.

Re complaint about privies on the east side of the Zanana Hospital at 118, Bow Bazar Street, received by Dr. Simpson, dated 22nd November 1896.

Notices. Nos. 948 and 945 were issued against Mohini Beneah and Rajab Bhoiah of No. 119, Bow Bazar Street, respectively, signed by Superintendent Martindale, on 22nd September 1896, to demolish or stop the use of their *kutcha* privies, which were complained of as a nuisance.

Those two persons and two others employed a pleader, who wrote a letter, dated 24th September 1896, refusing to comply, and asking the Vice-Chairman to enquire into the matter. The objection was disallowed by the Commissioners, and the notices were to hold good.

No further action was taken, nor has been taken. The last note is as follows :—

SUPERINTENDENT—

DR. BANKS—
This privy should be demolished at once.

W. J. S.—24-11-96.

The second notice has been sent to Health Officer for his signature, but will be issued shortly.

(Sd.) A. C. DUTTA—24-11-96.

The above is a lie, as the notice book was found lying on Mr. Martindale's table. In fact, the above note was recorded when the bundle was sent for to complete it. The fact is, I cannot believe a single word that the clerks in this office tell me. Each one blames the other when notices are delayed, as in this instance.

CHAIRMAN—
I quite agree with Dr. Banks. This office requires overhauling, and we shall have it done.

W. S. J.—24-11-96.

The Head Clerk now says that Mr. Martindale is solely responsible, and I regret that this Superintendent should delay matters in this way. In my opinion the clerical department should be completely overhauled and a lot of useless clerks weeded out.

The Head Clerk finds his subordinates so utterly incompetent that he has no pleasure in his work, and threatens to resign. The bundle relating to the appointment of Babu Abhoy Charan Bhattacharji was called for yesterday by Dr. Simpson, and I hope it will be produced soon.

Mr. Martindale should explain why no action has up to date been taken on the privies complained of. They still exist unaltered in any way.

Yes.

W. J. S.—24-11-96.

Visited wards V and VII hoping to cross the path of the Superintendent or Inspectors, but failed. I noticed that Mydaputti Street and others adjoining it are not being carefully cleansed. The sweeping is done in a slipshod manner, and the refuse not completely removed.

BABU M. M. GHOSH—
Please note. Meet me at Howrah Bridge at 6-15.

C. B.

I wish to see the extra establishment at work to-morrow.

Will see.

W. J. S.—24-11-96.

Enquired into a privy nuisance at No. 1, Council House Street. Should like Dr. Simpson's opinion in this case.

C. BANKS.—24-11-96.

25th November 1896.

Report dated the (Accompanied by Mr. M. M. Ghosh.)

Ward 5.—No. 4, Hanspooker Lane—Was cleaned by special gang yesterday. The lane between No. 4 *bustee* and No. 5, Hanspooker Lane, is defiled by the discharges from numerous body spouts, and at the end there is a privy which should be demolished and reconstructed on sanitary principles.

The two latrines attached to hut No. 4 are exceedingly foul, badly situated, and should be dealt with similarly. The vault of one of them is situated in close proximity to a house-pit into which the privy washings flow. At the back of this block of buildings there is still some house refuse, which should be removed. I understand this space contained a large quantity of night-soil. The low wall close by affords excellent opportunity for squatting.

3, Hanspooker Lane.—Counted 7 body spouts pouring their discharges into the surface drains. The walls of the neighbouring *katcha* buildings are soaked with foul material.

2, Hanspooker 1st Lane.—The privy vault is enormous in size, dark and unventilated. The night-soil *gumla* is broken in two, and the floor is thickly coated with sewage. The liquid portion is flowing through the surface drain into the house-pit.

The privy should be demolished immediately, and if a more sanitary one is constructed, it should be connected with the sewer. Judging from the size and character of the house, the owner should not, I think, deem it a hardship if called upon to do so.

Separated from this privy by a wall is a single compartment with neither light nor fresh air, occupied by a man, his wife, and a bullock. In the centre of the floor there is large grinding stone (*chaki*) with a wooden pole attached. The bullock is used for turning this huge stone in the manufacture of flour, etc., for sale by the owner. The rent is Rs. 3-8 per month.

The husband and wife sleep at the one end of this apartment and the bullock at the other. The floor space between is filled up by machinery, flour bags, baskets, etc.

No. 1-4, Hanspooker Lane.—I notice since my previous remarks on this place that ferrules have been provided for the water taps and the broken night-soil pipes replaced by substantial cast-iron new pipes. The smell is still terribly bad, and is due, in my opinion, to the escape of sewer gas from the privy vault situated on the ground floor. The seat of the privy on the top flat is fouled.

The vault could not be inspected owing to the continuous discharge of foul liquid from the body spouts in the neighbourhood.

Despite what has been done to improve matters, I regard this enormous block of houses as dangerous from the point of view of public health, and until the privy arrangements are completely altered, human beings should not be allowed to live there. The privies should be demolished, reconstructed, and connected with the sewer. In this case section 319 might be applied.

No. 22, Hanspooker 1st Lane.—Notice served on 21st November on Ram Lal Seth. As nothing was done, three mehters commenced this morning to clean privy vault and road leading hereto.

The entrance is 20 yards long, 9 feet high, and the refuse 3 feet deep. The vault is bespattered with night-soil, and the floor soaked with it. There is neither light nor ventilation.

No. 3, Hanspooker 1st Lane.—The Inspectors, Messrs. Leslie, Smith and Mullik, find it impossible to cleanse and white-wash the room attached to the houses here. The people on whom notices have been served lock their doors and go elsewhere.

The Inspectors fear a breach of the peace. They have been requested to prosecute all such offenders under section 396.

There were 11 white-washers and 1 mate at work here.

No. 6, Hanspooker 1st Lane.—Refuse here was 4 feet high, and the *pucka* surface drain and house-pit completely covered and obstructed. Behind this heap of refuse, there is an accumulation of sewage, 20 feet long and 3 feet broad and 1½ feet deep.

There are 18 body spouts, 11 of which only reach the ground level, but some of them are imbedded in the refuse. The other seven have no pipes.

Twenty coolies and one mate are employed here.

No. 7, Hanspooker Lane.—Twenty-six coolies, seven mehters, and one mate divided into three gangs, were hard at work in adjoining lanes which wriggle about from street to street after the nature of a Chinese puzzle.

No. 4, Jaganand Mullik's Lane.—This is a most vile spot. The cattle shed rented by Baglu Goala and owned by Kali Charan Khetri should not be allowed to exist there. Proceedings should be instituted and the place abandoned.

8 & 9, Hanspooker Lane.—Should be immediately dealt with under section 319. The verandah and roof of the second and third floors of No. 8 are about to dissolve partnership. Already a portion of the roof, 15 feet × 5, has collapsed, and the rest of it is rapidly going. One masonry pillar has fallen down, and others will follow suit shortly. The rafters of the roof of the top floor are rotten, and some of them do not exist, and the tiles are hanging loosely in the ceiling. I would strongly recommend that this building should be condemned without further delay. In No. 9 one room on second and another on top floor are occupied. Shopkeepers occupy the ground floor rooms.

No. 13, Banstollah Street—Is a three-storeyed unoccupied building with a frontage 42 feet board. It is in a dilapidated condition and dangerous. It should be demolished.

No. 32, Panstollah Street.—Seven coolies employed cleaning privy and removing refuse. The road here should be thoroughly repaired by Hari Ram Goenka, who caused it to be dug up in order to introduce gas pipes. There is an overhead bridge connecting the two blocks of buildings which, I understand, was erected by the same gentleman without permission.

No. 33, Banstollah Street.—Owner's name Hari Lal Johori. Notice should be issued to have privy demolished. The refuse has been removed.

No. 5, Suklal Johori's Lane.—Privy should be demolished, and refuse lying in lane, 9 inches broad, should be removed. The coolies should be sent back to do so.

No. 2, Suklal Johuri's Lane.—Notice should be issued to demolish privy.

No. 22, Durponarayan Tagore Street.—It was reported yesterday that cows were dying in unusally large numbers in the stables in this neighbourhood, or 20 in a fortnight. I accompanied Dr. Simpson last evening to the spot, but we could elicit no facts. This morning interviewed the peon in charge of the ward, who showed me a shed in which he saw three dead cows. The owner denied that any of his cows had died. The fact is the cows have died, but the truth cannot be got at. There is a sick cow in the same shed now. The only visible signs of sickness are blood in the excreta, watering of the eyes, and a disinclination for food.

No. 35, Dharmahatta Street.—Twenty-one coolies at work. There is a salt godown here. The sacks are saturated with the liquid discharges from the dwelling-house above it. The salt is said to be used for tanning leather. The house referred to does not seem safe to live in.

Remarks.—There are altogether 177 extra coolies at work to-day, and I satisfied myself that this is correct. The work is going on excellently and the amount of refuse removed large. White-washing is being carefully and completely done. Four ladders were in use this morning. I trust the Inspector in charge will continue to show the same diligence.

C. Banks.

Dr. Banks—

There are many matters in this which should be brought to the notice of the Road Department. If this has not been done, send it to them to take action, and I should like to know results.

H. C. W.—29-11-96.

Report dated the 28th November 1896.

Ward No. 1.—Inspected school premises situated at Nos. 87-1, 87-2, 87-3, 87-4 and 87-5, Cornwallis Street, the scanty privy accommodation of which was brought to notice by Medical Inspector, S. C. Mittra.

There are altogether three mehter-service latrines, each single-seated, attached to the building.

The first is situated at the back of the house and is used by the Rector and his family, consisting of six persons. The privy vault opens into a large open space behind. The door of the vault is broken, latrine is fairly clean, but badly ventilated.

Second latrine is situated in the courtyard at the bottom of a flight of stairs leading to the top of the house. The door has no hinges; there is no ventilation when the door is shut; the vault opening into the courtyard contains the night-soil *gumlas* for receiving the night-soil from this latrine, and one situated on the second floor. Neither of these could be seen without the aid of a lantern. Both *gumlas* were empty but fouled, and the floor of the vault contained a large collection of urine. The doors and walls in the neighbourhood were tarred. This latrine is used by between 400 and 500 boys.

Third latrine is situated on the second floor immediately above the second. The urine escapes through a channel in the floor of the privy and flows through a hole in the wall to a pit in the floor of the courtyard. There is no pipe. I need not state the results.

Remarks.

1. All the water taps in the building leak badly, and there is an objectionable waste of water.

2. The walls, windows, and doors are very dirty. The cob-webs should be removed, the walls whitewashed, the windows cleaned, and the woodwork painted.

Seen.
W. J. S.—28-11-96.

3. More latrine accommodation should be provided and connected with the sewers.

Ward V.—13, Dayahatta Street.—Kumar Babu was present with a plan of proposed alteration in privy arrangements which seem satisfactory, but Dr. Simpson's opinion will be of value. I submitted a full report on this house on 8th November 1896.

Will see on Monday.
W. J. S.—28-11-96.

The walls and rooms on one side of the second floor have been thoroughly white-washed.

There can be no doubt that the owner is fully determined to carry out our suggestions. Kumar Babu promises to try and persuade him to get rid of the numerous pigeons, which are a great nuisance about the place.

Ward IV.—4, Sunker Ghose's Lane.—Inspected the proposed site for temporary mehter service latrines with reference to plan. This is a large pucka new building. The privies ar

to be erected at the back. I would recommend that the owner be allowed to erect two Donaldson's latrines only. The third is objected to, on the ground that it would abut against a *bustee* hut, and prove a nuisance to the inmates thereof.

The only water tap which I noticed in this building has no stop cock, a piece of wood being used instead. A waste of water is unavoidable under present conditions. Two floors of adjoining rooms are under flood.

Ward V.—Re the house at 81, Burtola Street, attended Police Court to-day. As the party agreed to carry out the wishes of the Health Department in the matter of necessary repairs and improvements, the hearing of the case was postponed till Monday. At the request of the Government pleader I hurriedly drew up in the Court building a list of improvements, etc., necessary, of which the following is a copy :—

1. The grain should be removed and intimation sent to Health Officer, so that it can be inspected after removal.
2. The house should be vacated until made habitable—

(*a*) The frontage should be demolished and rebuilt with a plinth not less than 2 feet above road level.
(*b*) Privy should be demolished and one constructed with sufficient accommodation, connected with sewers, and adequate flushing arrangements provided.
(*c*) The outside and inside of house and rooms should be thoroughly white-washed, doors tarred or painted.
(*d*) Floors should be made *pucka* after present floors have been dug up and dead rats, etc., removed.
(*e*) Surface drains should be reconstructed and connected with sewer with proper traps provided to prevent escape of sewer gas.
(*f*) Courtyards should be paved with bricks-on-edge and cement pointed.
(*g*) Down pipes should be provided, made of cast-iron, to carry house washings to drains.
(*h*) *Pucka* platforms should be provided for grain 3 feet above floor level.
(*i*) Rooms above should be provided with windows for ventilation not less than 4 × 3 feet.
(*j*) They should promise to carry out any other suggestion that may be made afterwards, and should not occupy the building till certified by Health Officer that the house is habitable.

I understand it will be necessary for Dr. Simpson to inspect the grain on Monday morning, by which time the party promises to have it all removed to a more suitable place. Personally I think one of the Medical Inspectors ought to be deputed to see that no bad or unwholesome grain is hidden away, but at once removed for destruction.

C. Banks.

Assistant Health Officer—

Food Inspector should visit 81, Burtola Street, two or three times a day, and see that no grain which is unfit for consumption should be hidden away.

W. J. S.—28-11-96.

Dr. Laheri, Food Inspector—

Carry out Health Officer's order please, and report daily what you find.

R. S.—28-11-96.

Urgent.

Extract sent to Dr. Laheri to-day through ward No. 5 diary.

P. L. D.—28-11-96.

Seen and satisfactory. I conclude necessary orders have been issued.

H. C. W.—7-12-96.

Report dated the 29th November 1896.

Ward No. 12.—The privy at 7, Wellesley Place, about which a complaint was received from the Superintendent of the Government House Stables, and a great deal of correspondence has taken place, is a nuisance which should not be tolerated in such an important and civilised street a single day. The Engineering Department say that there are no records in

their office to show that sanction was granted for its construction. Notice should be issued on Mr. Boseck, Jeweller, who is the owner, to demolish it, and provide latrine accommodation elsewhere, if necessary, after submitting his plan.

Ward No. 10.—A complaint was received, on 7th October 1896, from G. O'Brien of 164, Dharamtola Street, regarding privy attached to the Government Printing Works. There are eight seats, and automatic flushing arrangements, which are apparently inadequate, as the mehters were found hand-flushing them. The night-soil falls into a trough, through which it passes into the sewers.

The cast-iron lid of yard pit, near latrine, is broken in two, and the pit is fouled and choked. The privy pit is unclean and not carefully flushed. The water taps are defective, and leak. The premises are not swept. They are also untidy. If syphon pans were provided instead of trough latrines, more care bestowed upon them, and the pits attached to them attended to better, I do not think it would be necessary for the people living close by to lodge complaints. Copy of my remarks should be sent to the Superintendent of Printing Workshops.

Ward No. 9.—No. 14, Circular Road.—This is a new house which I formerly visited. I refused sanction for the occupation of the building, as the latrines did not fulfil all the requirements. Iron pipes should be provided to convey the urine from both privy floors directly into the sewers, and larger windows provided for ventilation. I am told that Donaldson's latrines have not been adopted by the Commissioners as the standard latrines. I think this a pity. All the same, the Inspectors should neither sanction, nor approve of, others in future without consulting Health Officer. I do not think any objection will be raised, as they are both cleanly and cheap. The quality of the plaster used is bad, and I notice no arrangements for washing the privies.

Ward No. 13.—No. 108, Jaun Bazar Street.—Is a lodging-house. The person in charge informed me that 13 persons occupied it. On being questioned further, he raised the number to 90, and finally to over 100. There are, as far as could be counted, 13 rooms, each holding 6 or 8 people. One double room, $10 \times 6 \times 9$ feet = 540, accommodates 8 individuals, thus giving each individual less than 70 cubic feet. We counted 75, but the inmates tell us that 150 is about correct. The rooms, as a rule, are unventilated, except through the doorway.

The rooms on the lower floor are let at Rs. 2-6 per month, and those on the top floor at Rs. 7 per month. The premises are filthy and the drains obstructed. We counted 13 body spouts, two of which were attached to urinals on the top floor, and reached the ground floor. The others were for the most part holes in the wall, with, in one or two cases, a piece of earthenware pipe projecting; at the back of the building there are three drop latrines. The large *gumlas* in the vaults were full of night-soil. The doors of the vaults have no hinges. The smell was most objectionable. The owner of this house, S. M. Hariman Mohini Dasi, Panihati, near Agarpara, should be addressed on the subject of necessary improvements, and informed that her agent is not fit for his duties.

Ward No. 14.—The application of Hazee Torab Alli, of 107, Jaun Bazar Street, for a stable license, should be rejected. The stable is defective in every way, and although he received three months' extension of time to carry out orders, he failed to do so. The Inspector should spend no more time in connection with this application.

Ward No. 11.—The complaint of 25th November 1896, from Babu Trepondeswar Mitra, inspected the drop privies attached to his house at No. 30, Hedaram Banerjee's Lane. The atmosphere of the courtyard is absolutely poisoned with sewer gas. There is one mehter-service privy on the ground floor, and another on the second floor. He complained two and a half years previously, and it is evident that the privy vault during this time has not been cleaned. The vault is full of night-soil, some of which, along with urine, has passed into and filled up the yard pit, which seems to have no connection with the sewer drain. The complainant during this time has been paying a fee of a rupee every fortnight for having the privy attended to. The owner should be ordered to construct connected privies.

Ward No. 9.—56, College Street.—Application by Rameshwar Das for stable license. The situation is not objectionable perhaps, but as cooking goes on here and cooking arrangements are provided and bed cots suspended from the roof immediately above, the place is unsuitable for such a purpose and no license should be granted. The drains, moreover, are defective.

Ward No. 8.—13, Harinbaree Lane.—Solomon Ezekiel Huda wishes a meat-shop license. The room is small, no ventilation except through doorway. There is a drainage trap at the door step, and also two gully-pits. Adjoining it is a goat stable, recently, I understand, licensed as a meat-shop, which I venture to think a mistake. The next house is a dhobikhannah.

No license should be given to Solomon, and I think his neighbour should be deprived of the one he has obtained. I should like to see this neighbourhood kept very much cleaner.

Whose cattle shed is in this lane, and who is the owner of the market place?

Ward 11.—Gobind Sirkar's Lane.—Owner, Kali Charan Ghose, applied for a cow-shed license in February, and the correspondence has been going on since. He was prosecuted under section 336, and served with notice under section 387, and proceeded against under section 388. He was asked to improve his shed. The Superintendent tells me that he has raised the roof, paved the floor, and drained it, and laid on water. I fail to see that the floor is in such a state as would justify me in granting a license. There is a well in the middle of the floor of the cow-shed which should be at once filled up. The situation in my opinion is not suitable, and notice should be issued on him to abandon the use of it. The Commissioner

of the ward, Babu Daveprosad Sarvadhicary, and other inhabitants of the neighbourhood, complain of it as a nuisance. I was unable to enter the place and count the cattle.

C. BANKS.

HAS license been refused?

H. C. W.—5-12-26.

Report dated the 4th December 1896.

Ward No. 13.—Gowaltoli Lane off Jaun Bazar Street.—Night-soil depôt and latrine attached.

Depôt.—Floor broken and sunken. Has four water taps connected with pipe attached to cistern above.

Latrine.—The latrine has 32 seats, arranged in two rows. There is no accommodation for females.

The night-soil passes into earthenware sewers along an inclined surface leading from the seats.

The building is about 8 feet and the partition walls 5 feet high, thus giving 3 feet space for ventilation. There are two mehters in attendance, who live on the premises in dilapidated *kutcha* huts. The latrine is hand-flushed. The water-supply is cut off between 11 A.M. and 2 P.M.

The floor of the compound is broken up here and there, and there are numerous cracks all over it.

This latrine is crowded day and night, and the accommodation is utterly insufficient.

Site distinctly objectionable.

Ward No. 13.—Collinga Bazar Street.—Latrine and depôt.

Latrine—Has 24 seats, 12 of which are reserved for females. There is a partition wall. The opening through which the night-soil passes into the sewers is 7 inches in diameter, with a slope leading from the surface. The ceiling ventilation which is secured by six ventilators about 1½ feet in diameter, but which are covered with mats, is not sufficient. It was noticeable that the drains outside the female latrines were fouled with night-soil. The latrine is flushed by raising a plug in the bottom of the cistern attached to it.

Depôt.—Floor is completely broken up. There are four water-taps. The cistern is too small for adequate flushing. It is said that the water-supply is cut off at 9 A.M., when street watering begins, and for one hour no water is available. It is again cut off between 11 A.M. and 2 P.M. There is one mehter in attendance, who lives on the premises. A reserve supply of water is required, and arrangements should be made accordingly. No disinfectants were being used.

Ward No. 14.—Khalashitollah latrine and depôt.

Latrine.—The trough system is in use. The trough is too narrow and square, instead of saucer-shaped, and the drain is bespattered with night-soil and urine. There are 24 seats, arranged in two rows. There are two mehters in attendance, but as no house has been provided, they do not sleep on the premises at night. There is no separate place for females. Ventilation good. Phenyle was being used, but too sparingly, to mask the smell to any appreciable degree.

There is an automatic flushing cistern, but the mehters do not understand it, and they resort to hand-flushing.

Depôt.—Of four water-taps—one is leaking, two are in good working order, and there is no cock attached to the fourth. It has been, no doubt, stolen.

The cistern attached is immensely large. The mehter is in attendance till 10 A.M.

Ventilation is inadequate. There is roof ventilation secured by a space 9 inches broad and windows 2½ × 1½ feet.

It is built in a large open square, well flushed, and I do not think very objectionable.

Ward No. 14.—73, Jaun Bazar.—Depôt, latrine, and bathing platform.

Depôt.—Has one tap with a large supply of water controlled by a stop cock. Floor of depôt in good repair, but the compound is broken and sunken. One depôt mehter resident. Phenyle being used.

Latrine.—Has 16 seats for males and 4 for females, separated by a wall. The building is *pucka* has no roof ventilation, but the side ventilation is good. The latrine is hand-flushed, as the handle attached to cistern plug has been last, stolen or has strayed, and the plug can only be got at by the great toe of the mehters in charge, which, however, failed to remove it this morning. The night-soil drops into sewer drains direct. There are wooden doors attached, which is uncommon in latrines.

Two mehters in attendance all day. Reservoir is large and water-supply practically constant.

Floors are good and made of stone-ware composition. St. Theresa's Chapel is situated within, I should say, 30 feet of the depôt and latrine. The Calcutta Boys' School within 75 yards, and a Christian Boys' School 100 yards away. There is a large open space all round elsewhere, and as no complaints have been received, it does not appear seriously objected to, but in my opinion it is very objectionable all the same.

Ward No. 9.—Old Boitakhanna Bazar Road.—Night-soil depôt has no latrine attached. A drain from the Northern Gowkhanna passes through the wall into the depôt compound and discharges itself into a pit connected with the sewer amongst the roots of a tree and over

the broken side of the drain. This tree was making havoc of the entire compound, and it is surprising that it has not long ago been removed. This depôt is in urgent need of masonry repairs.

There is every sign of absolute neglect. There are three water-taps attached to cistern pipe, but one of the cocks is missing.

The mehter is in charge till 12 noon daily. Water is said to be insufficient till 9 A.M. In fact it is at no time sufficient.

Ward No. 9.—Northern Gowkhanna latrine—Has 10 seats for over 300 people and outsiders who come over the wall to use this latrine. The trough is 1½ feet deep by 8 inches broad and square. The cock of the water tap has been stolen. It is hand-flushed by water collected in a wooden tub. It is dark, badly ventilated, and although carbolic powder is used freely, the smell is overpowering. This latrine is not a credit to the Commissioners, and should be at once taken in hand.

(NORTH PORTION.)

Ward 4.—Badoor Bagan depôt and latrine—

Depôt.—Completely obstructed and pit overflowing with night-soil and mehter vainly trying to coax it into the sewer. There is hardly any water-supply. Complaint made this morning. It is always going out of order. The thatched roof is in a dilapidated state. The floor is *pucka* and in fairly good order. Two mehters live on the premises. They work till 11 A.M. and from 10 P.M. till sometimes 4 A.M. disposing of night-soil brought in eight carts from the Fort; why the night-soil from the Fort should be conveyed to this depôt, I cannot understand. At any rate, if necessary, on the ground that it may not be considered a nuisance elsewhere, special attention should be given to flushing arrangements, etc.

Latrine—Has 8 seats for males and 7 for females. The floors are completely broken up, and bricks of which it is made lying loosely about. The night-soil drops into a drain between the two rows of seats and lies there. This latrine is in a terribly filthy condition, and Mr. Jacob knows very little about it.

The flushing arrangements are actually at the wrong end, and any flushing done is done by the hand. I am astonished that this latrine has not been complained of by the Inspector. It should be completely remodelled.

Ward 4.—7-1, Bachoo Chatterjee's Street.—In the house situated here, which is quite new, are four connected privies—two situated on the ground floor and two on the second floor. Flushing arrangements are provided, but water-supply for flushing has not been obtained. One pipe is choked with night-soil for a certainty. I am doubtful about the others. They are all however being used, and how obstruction is to be avoided, I do not know. All these privies are in the courtyard.

7. *Banchoo Chatterjee's Street.*—Is a comparatively new building with connected privy on ground floor. The flushing cistern contains a basket and an earthenware *chatty*, and there is no ball cock. There is a huge hole in the bottom of the cistern. The result is a great waste of water and soakage of the soil.

There is no ventilation when the door is shut, except through a small broken glass window.

8. *Bechoo Chatterjees Street (8 Bechoo Chatterjee's Street).*—Two new houses. There are two connected privies on the ground floor, both well flushed and flushing arrangements in good order. Ventilation is bad. Ventilating tubes should be provided.

Ward 4.—34-1 and 34-2, Jhamapooker Lane.—A stable and a dwelling-house are being constructed over the site of a tank filled up ten years ago. Both *kutcha*. The privy attached to the stable has a mehter's passage, 3 × 2 feet, and should not have been sanctioned. Neither the stable nor the house in my opinion should have been constructed on this open square.

100, Machooa Bazar Street.—Sanction has been accorded to the construction of a mehter-service privy in the courtyard and two on the side of the bye-lane. The building encroaches on the lane to the extent of 3 feet 4 inches. The owner, of course, says he built on his own land. The door of the privy vaults is 2′ 6″ × 1′ 6″. The distance to the *gumla* will be 6 feet, and the mehter will find it rather difficult to reach it. It should not be allowed. The depth of the drop is 3 feet. There is no provision made for the disposal of urine, which, the owner says, will pass into the surface drain, which is at present covered with masonry *debris*. The surface drains in this neighbourhood are filthy.

102, Amherst Street.—A Donaldson's latrine was sanctioned by Health Department, but a *pucka* old-fashioned privy was allowed by the Building Committee to be built.

157, Upper Circular Road.—The privies proposed to be constructed in connection with this house will have openings towards a public bathing platform, and will adjoin Hathi Bagan Street.

I understand the Health Department objected, but the Buildings Committee sanctioned their construction.

C. BANKS.

DR. BANKS—

I think the condition of these latrines have often been reported on. I shall be obliged if the Superintendents will at once furnish me with a list of all the latrines and depôts in town and suburbs, stating their condition. How many times their insanitary condition has

been reported on. The number of reminders sent with result, and more particularly with regard to those you now show to be bad.

I feel sure that in most of them the Health Department has taken action, but evidently with no result.

W. J. S.—4-12-96.

Report dated the 7th December 1896.

INSPECTED the work of the extra gang of coolies at Hanspooker Lane, and found it progressing satisfactorily. White-washing might be done better.

The Inspector's attention (Mr. Leslie) should be drawn to this remark.

The following are some houses in the courtyard or premises of which wells and privies exist within a few feet of each other, all of which I saw:—

No. 3, Lukhi Narain Mukerji's Lane—Two privies and 2 wells. One of the wells contained no water. Depth of well about 15 feet or so.

No. 9, Lukhi Narain Mukerji's Lane.—Privy 4 feet from well.

No. 7, Hanspooker Lane.—Privy 10 feet from well.

2nd.—No. 9, Lukhi Narain Mukerji's Lane.—Privy 9 feet from well.

No. 9, Lukhi Narain Mukerji's Lane.—Privy 8 feet from well.

No. 17, Durpa Narain Tagore Street.—Privy one foot from well.

No. 17, Durpa Narain Tagore Street.—Privy 4 feet from well.

No. 29, Durpa Narain Tagore Street.—Privy 6 feet from well

No. 29, Durpa Narain Tagore Street.—Privy 20 feet from well.

No. 7, Hanspooker 1st Lane.—Privy 6 feet from well.

No. 15 Jorabagan bustee.—Privy 6 feet from well.

No. 15, Jorabagan bustee.—Privy 8 feet from well.

No. 15, Jorabagan bustee.—Privy 6 feet from well.

No. 16-1, Jorabagan bustee.—Privy 15 feet from well.

No. 16-1, Jorabagan bustee.—Privy 8 feet from well.

These wells are said to be used for bathing, washing clothes, washing cooking utensils, and for use in the event of fire.

The owners assure me that the water is never used for drinking purposes. It is difficult to believe when the tap water is turned off that the water of these wells is not used for drinking; and I have some difficulty in believing that when tap water is available at even a moderate distance, the people do not use well water for drinking. In my opinion these wells should be closed, and to enable the Health Department to do this as easily as is desirable, it would be necessary to provide a much more liberal supply of tap water. I understand that a resolution was passed by the Commissioners to the effect that no wells should be filled up without first having the water analysed. This seriously cripples the Health Department, and as now-a-days the opinion of experts is that chemical analysis counts for little, and bacteriological investigation a great deal, in arriving at a conclusion as to the purity or otherwise of water, it appears to me undesirable to impose such conditions. Moreover, I am of opinion that common sense would suffice in most instances, and that chemical analysis is a mere waste of time, labour, and money.

38, Durponarain Ghat Street.—The privies attached to this house could not easily be surpassed in the matter of filthiness. I saw the drop platform through the back windows at 38, Shib Thakore Lane. The surroundings are abominable.

I propose making a careful inspection of this place soon.

C. BANKS.

APPENDIX A.

SECTIONS IN ACT.

Section 286.—There is no provision for compelling the construction of urinals for private houses, lodging-houses, theatres, or other public buildings for recreation or amusement. This section is applied chiefly against privies. It has been applied against cow-sheds and stables in which case the work is supposed to be done by the Engineering Department. The owners are tenants-at-will in most instances, and there is the risk of the occupier removing his house or hut elsewere to avoid payment of expense incurred through paving the floor, &c., and leaving the Commissioners in the lurch.

No punishment can be inflicted on any person constructing a privy without sanction after submitting a plan, and sanction not having been granted by the Commissioners, but of course the privy may be demolished.

If he submits no plan, he can be dealt with under bye-law (*g*) 27. The Building Committee are of opinion that section 286 does not apply to private stables.

Section 287 works well. This is the section under which most of the work by the extra establishment during the past two months has been done, and the notices under this section are signed by the Conservancy Superintendents.

Section 437 handicaps section 286, and all others in fact.

Sections 288 and 289 work satisfactorily, and action is taken under those sections very frequently. The Assistant Health Officer and Superintendent sign notices under section 288, and Superintendents sign applications for summonses under section 289 when applied for by the Inspectors.

Section 292 is quite sufficient, but action is very seldom taken under it, except in cases of new privies, when it is frequently applied. Assistant Health Officer signs such notices after Superintendents.

Section 294 is sufficient and frequently applied in the suburbs, but seldom in the town area, because sites cannot be obtained except with great difficulty.

Section 385 is by no means summary in its action.

First—action is service of notice under section 387.

Second—in default of compliance an application has to be made to Magistrate.

Third—Magistrate issues summons on party to appear before him, which may be two or three months after date of application.

Fourth—if Magistrate is satisfied about nuisance existing or unabated, he may grant time in which to abate or remove the nuisance, which may extend to six months or more or less, or he may give prohibitory orders or impose a penalty in addition to his orders.

Fifth—then we are brought back to section 286 by the wording of section 391.

Notice under section 387, under which 385 comes, are signed by Superintendents, Assistant Health Officer, and Secretary.

This section is very seldom applied.

Bye-laws under section 412 (g)?—Please see page 11 of bye-laws of Commissioners, which are numerous.

No action under section 320 has ever been taken. Action was once taken under section 319 by Dr. Simpson and Dr. O'Brien in 1892, when modifications were made in the house concerned.

DELEGATION OF POWERS.

Sections in which Health Officer's orders are necessary.

Notices.—437, 315, 318.
Prosecutions.—336, 364, 396, 316, 333, 337, 339, 357, 389, and 391.

Sections in which the Assistant Health Officer may pass orders without reference to any other officer.

Notices.—187, 292, 294, 322, 327, 329, 332, 334, 375, and 387.
Prosecutions.—188, 191, 293, 341, 342, 344, 348, 349, 367, 374, 376, 380, 382, 388, and 417.

Sections in which Superintendents may pass orders without referance to any higher officer.

Notices.—286, 287, 288, 290, 298, 307, 309, 314, 393, 394, 438, 453.
Prosecutions.—289, 291, 299, 300, 302, 307, and 312.

Explanatory notes on the headings of the appended statement which shows the actual strength of the Conservancy Establishment of the Calcutta Corporation for 1896-97.

1. *Conservency peons*—Pay Rs. 7, look after the sweeping of, and removal of refuse from, the streets and lanes.
2. *Road coolies*—Pay Rs. 5-8, sweep the roads and lanes.
3. *Cart coolies*—Pay Rs. 5-8, pick up refuse, load double carts, and unload them at the refuse platforms in Circular Road.
4. *Road mehters*—Pay Rs. 5, go about the streets picking up human ordure, sprinkle disinfectant powder, wash and disinfect public urinals.
5. *Domes*—Pay Rs. 5, pick up carcases from the streets and *bustees* and deposit them in dome carts placed at certain spots.
6. *Road bhisties*—Pay Rs. 5, flush the channels in streets, &c.
7. *Sewered ditch coolies*—Pay Rs. 5-8, sweep and clean sewered ditches.
8. *Port Commissioners' road peons*—Pay Rs. 7, supervise the sweeping and removal of refuse from the jetties and roads.
9. *Port Commissioners road coolies*—Pay Rs. 5-8, sweep the jetties and load the waggons.
10. *Port Commissioner's hired carts*—At Rs. 22-4-3, remove the refuse to the waggons placed within the jetties, and, if necessary, take the refuse to the platforms.

NOTE.—Powers were first delegated to the officers referred to above by Sir. H. L. Harrison on 3rd May 1889. A printed copy of the order on the subject is available for reference in the Health Office. Modifications have been made since, but the above statement, I understand, shows the present powers exercised by the officers designated.

. BANKS.

11. *Waggon or refuse platform sarkars*—Pay Rs. 12, keep tally of carts bringing refuse to the platforms, supervise the work of the coolies, and see that the platforms are swept clean after the work is done.

12. *Refuse platform coolies*—Pay Rs. 5-8, push the carts up the ramp, unload carts into the waggons, shunt the waggons when necessary, and sweep the platforms.

13. *Horse dropping peons*—Pay Rs. 7, supervise the work of coolies and carts engaged in picking up and removing horse droppings from streets.

14. *Horse dropping coolies*—Pay Rs. 5-8, pick up and collect horse droppings.

15. *Horse dropping carts*—At Rs. { N. 22-4-3 / S. 21-8 } remove the horse droppings from the streets to the refuse platforms.

16. *Trade refuse hired cattle*—At Rs. 18-10, remove liquid refuse from cow and cattle sheds to the night-soil discharge depôts.

17. *Street gully-pit coolies*—Pay Rs. 5-8, open the gratings, lift up the silt in galvanized iron buckets from the gully-pits, and load the gully-pit carts.

18. *Street gully-pit bhistis*—Pay Rs. 5, fetch water and fill up the gully-pits after they are cleansed.

19. *Street gully-pit boys*—Pay Rs. 3-4, get inside the gully-pits, scoop up the silt, and put it in galvanized iron buckets for removal.

20. *Road scraping establishment*—Consist of carts, the number of which is determined from day to day only during the rainy season by the actual requirement.

21. *Added area peons*—Pay Rs. 7, supervise the sweeping of roads and streets, and removal of refuse therefrom to the platforms.

22. *Added area coolies*—Pay Rs. 5-8, sweep the roads and streets.

23. *Added area domes*—Pay Rs. 5, go about picking up carcases and deposit them in carts stationed at certain places.

24. *Added area hired carts*—At Rs. { N. 22-4-3 / S. 21-8 } remove refuse to the platforms.

25. *Added area kutcha ditch peons*—Pay Rs. 7, supervise the work of coolies engaged in cleaning the *kutcha* drains

26. *Added area kutcha ditch coolies*—Pay Rs. 5-8, clean the *kutcha* drains.

27. *Added area trade refuse hired cattle*—At Rs. 18-10, remove liquid refuse from cow and cattle-sheds to the night-soil discharge depôts.

28. (*a*) *Double carts* (*Gowkhana*)—Are loaded by coolies, taken to the refuse platforms and unloaded there.

(*b*) *Single carts* (*Gowkhana*)—The carters themselves pick up the refuse from the streets and take the carts to the platforms in the Town area and to the refuse grounds in the Suburban area.

29. *Bustee peons*.—Pay Rs. 7, supervise the work of cleaning the *bustees* and removing the refuse therefrom.

30. *Bustee sardars*—Pay Rs. 6, sort of assistants to the *peons*, and help the latter to supervise the *bustees*.

31. *Bustee coolies*.—Pay Rs. 5-8, sweep, collect and deposit in the nearest roads or passages accessible to carts and wash the drains.

32. *Bustee bhistis*—Pay Rs. 5, flush the *bustee* drains.

33. *Bustee hired carts*—At Rs { N. 22-4-3 / S. 21-8 } remove the refuse already collected by the coolies from *bustees* to the platforms.

34. *Bustee tindals*—Pay Rs. 10, see to the cleaning of choked pits in *bustees*.

35. *Bustee pit cleaning coolies*—Pay Rs. 5-8, cleanse the choked *bustee* pits.

36. *Night-soil peons*—Pay Rs. 7, supervise the work of mehters.

37. *Night-soil sarkars*—Pay Rs. 16 (only in Suburban area), supervise the work of night-soil peons, privy examiners and mehters.

38. *Privy examiners*—Pay Rs. 7 (only in Suburban area), supervise the work of mehters, examine the privies, and have the work of the absentee mehters done by ticca hands.

39. *Night-soil mates*—Pay Rs. 8 (only in Town area), do the same work as done by the privy examiners in the Suburban area.

40. *Night-soil mehters*—Pay Rs. 8, cleanse the privies and remove the collections in buckets to the discharge depôt and trenching grounds.

41. *Port Commissioners' Road mehters*—Pay Rs. 8, go about picking human ordure from the Jetties, Port Commissioner' roads and the Port Trust Railway lines.

42. *Coopers*—Pay Rs. 10, repair the night-soil buckets, and also do petty repairs to the boxes for the hired carts.

43. *Dalhousie Square mehters*—Pay Rs. 8, attend to the public urinals

44. *Old Dharamtola Market mehters*—Pay Rs. 7, sweep the roads and flush the channels.

45. *Depôt mehters*—Pay Rs. 8, work and flush the depôts and pick out brickbats, rags, &c., to prevent the connection being choked up.

46. *Free latrine mehters*—Pay Rs. 8, cleanse, sweep and disinfect the latrines.

47. *Added area night-soil peons*—Pay Rs. 7, supervise the work of mehters in the added area.

48. *Added area night-soil mehters*—Pay Rs. 8, cleanse the privies and remove the contents in buckets to the discharge depôt.

49. *Added area free latrine mehters*—Pay Rs. 8, cleanse, sweep and disinfect.

50. *Night-soil carts, hired cattle*—At Rs. { N. 18-10 / S. 16-4 } remove night-soil from latrines in the unsewered area to the depôts and trenching ground.

51. *Trenching coolies*—Pay Rs. 8, dig trenches and cover them up with earth.

52. *Trenching cooly sardars*—Pay Rs. 10, supervise the work of the trenching coolies.

53. *Hired cattle for sullage carts*—At Rs. 16-4 (in the Suburban area), remove sullage from the latrines attached to mills, dockyards and cooly depôts, and also from latrines in private houses to the discharge depôts and trenching grounds.

54. *Hired cattle for trade refuse carts*—At Rs. 16-4, remove liquid refuse fron cow-sheds, cattle-sheds, and stables to the depôts and trenching grounds.

55. *Hired conservancy carts*—At Rs. 23, remove refuse from streets and take it to the Incinerator at Guragatcha.

56. *Dome carts* (*Gowkhana*),—Stationed at certain places for convenience sake, and when the domes have finished their rounds, are removed to Dhappa skinning platform.

57. *Tallymen*—Pay Rs. 15 (only in Suburban area), take tally of carts (night-soil, sullage and trade refuse) and night-soil buckets brought to the depôt and the trenching grounds.

58. *Jamadari latrines*—Are the property of private individuals, and are licensed yearly. A small fee is levied per head by the owners.

59. *Free latrines*—Belong to the Corporation and are for the convenience of the public.

60. *Night-soil depôts*—Where the night-soil is taken and discharged into the sewer.

61. *Number of privies in the list.*
62. *Number of public urinals.*
63. *Number of gully-pits.*
64. *Population.* } See Statement.
65. *Area of wards in acres.*
66. *Length of drains and sewered ditches.*
67. *Area of roads in square feet and miles, &c.*

68. *Budge-Budge Discharge Depôt Time-keepers*—Pay Rs. 16, take tally of night-soil buckets and night-soil sullage and trade refuse carts brought to the depôt.

69. *Discharge Depôt Peons*—Pay Rs. 8, stationed at certain junction of roads to see that the night-soil carts, &c., do not ply along any other roads than those prescribed.

70. *Budge-Budge Depôt Gully-pit Boys*—Pay Rs. 4, play the hose on the carts after they have discharged their contents into the pits, and also clean the pits.

71. *Budge-Budge Lamp Trimmer*—Pay Rs. 10, gets the lamps ready at the Budge-Budge Discharge Depôt.

72. *Tindal and Guragatcha Incinerator*—Pay Rs. 25, looks after the machinery and works the engine.

73. *Blacksmith at Guragatcha Incinerator*—Pay Rs. 15, does all the petty repairs.

74. *Boilerman* *ditto* *ditto* Pay Rs. 14, attends to the boiler.

75. *Stokers* *ditto* *ditto* Pay Rs. 14, attend to the furnaces where the refuse is burnt.

76. *Topman* *ditto* *ditto* Pay Rs. 10, put the refuse from the top platform into the furnaces.

77. *Ashmen* *ditto* *ditto* Pay Rs. 8, remove the ashes from under the fire-bars and take them away in wheel-barrows and deposit them in the ground.

78. *Cattle-shed peon.*—Pay Rs. 8, looks after the cleanliness of the cattle-shed belonging to the Corporation, which is leased out, and reports sickness, if any, among the cattle.

K. MUKHERJI, *Asst Supdt., Suburban Area.*

C. BANKS, M.D., *Supdt.-in-Chief.*

Dated 15th December 1896.

Statement showing the actual strength of conservancy, &c.,

	Conservancy peons.	Road coolies.	Cart coolies.	Road mehters.	Domes.	Road bhistes.	Sewered ditch coolies.	Port Commissioners' road peons.	Port Commissioners' road coolies.	Port Commissioners' road hired cart.	Waggon platform sarkars.	Waggon platform coolies.	Horse dropping peons.	Horse dropping coolies.	Horse dropping carts.	Hired bulls and carters for liquid manure carts for town area.	Street gully-pit coolies.	Street gully-pit bhistes.	Street gully-pit boys.	Road scraping establishment.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ward No. 1	2	22	...	2	2	2	2	...	...	...	1	8	...	...	...	3	4	3	4	
Ditto 2	2	27	4	2	2	3	8	1	8	2	...	...	...	...	...	...	3	3	3	
Ditto 3	2	20	...	2	2	2	9	...	...	...	...	...	.	2	1	4	3	3	3	
Ditto 4	2	24	...	2	2	2	7	...	...	...	1	11	...	...	..	2*	3	3	3	
Ditto 5	3	39	22	3	2	5	7	1	12	2	...	...	...	...	...	...	4	3	4	
Ditto 6	2	32	2	2	2	5	7	...	...	...	...	...	...	6	2	3	4	3	4	
Ditto 7	3	46	12	5	3	6	2	1	17	2	...	...	...	8	2	2*	9	4	9	
Total ...	16	210	40	18	15	25	49	3	37	6	2	39	...	16	5	14	30	22	30	
Ward No. 8	3	37	9	2	3	6	10	...	...	...	...	...	...	4	1	...	5	4	4	
Ditto 9	3	34	5	2	3	9	9	...	...	...	1	24	...	...	...	...	5	4	5	
Ditto 10	2	22	6	1	3	5	4	...		...	..	...	...	2	...	...	2	2	2	
Ditto 11	3	24	5	1	1	4	7	...	...	...	1	27	...	...	...	1*	2	2	2	
Ditto 12	4	25	16	1	4	6	2	...	...	...	...	...	1	12	6	...	3	3	3	
Ditto 13	2	29	12	2	2	5	5	...	...	...	...	...	1	6	3	...	4	1	3	
Ditto 14	2	17	4	2	2	5	7	...	...	...	...	...	...	...	...	1*	4	2	4	
Ditto 15	2	16	2	1	1	4	5	...	...	...	1	10	...	...	...	...	2	2	3	
Ditto 16	2	18	5	1	1	2	...	...	...	...	...	...	1	5	1	...	3	2	3	
Ditto 17	2	12	2	1	1	2	...	...	...	...	1	6	...	...	1	1*	3	1	3	
Ditto 18	2	24	8	...	1	3	...	...	...	...	...	...	...	...	...	1*	...	...	3	
Total ...	27	258	74	14	22	51	49	...	...	...	4	67	3	29	12	4	33	23	35	Rs. 10,000 only sanctioned for North and South Divisions.
Ward No. 19	1	25	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ditto 20	1	20	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ditto 21	1	16	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ditto 22	1	26	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ditto 23	1	20	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ditto 24	1	12	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Ditto 25	1	10	.	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
To al ...	7	129	.	...	7	...	...	...	...	...	...	...	...	...	...	...	..	...	...	

Superior Supervising staff.

2 Superintendents ... ... at Rs. 250 each (including Rs. 50 horse allowance.)
1 Superintendent ... ... ,, 350 (ditto ditto).
1 Assistant Superintendent ,, 230 (ditto Rs. 30 ditto).
1 Inspector ... ... ,, 200
2 Inspectors ... ... ,, 150 each.
1 Inspector ... ... ,, 140
1 Ditto ... ... ,, 130
18 Inspectors ... ... ,, 120 each.
1 Inspector ... ... ,, 62-8
1 Assistant Inspector ... ,, 60
1 Supervisor ... ... ,, 30
1 Time-keeper Guragatcha Incinerator. ,, 12
1 Officer for Guragatcha Incinerator. ,, 120

Subordinate Supervising Establishment.

118 Peons ... ... at Rs. 7 each.
3 Do. ... ... ,, 8 ,,
6 Waggon platform sarkars ... ,, 12 ,,
14 Sardars ... ... ,, 6 ,,
2 Trenching-ground sardars ... ,, 10 ,,
7 Privy examiners ... ... ,, 7 ,,
7 Night-soil sarkars ... ... ,, 16 ,,
49 Mates ... ... ,, 8 ,,
15 Tindals ... ... ,, 10 ,,
2 Time-keepers ... ... ,, 16 ,,
1 Tindal ... ... ,, 25
2 Tallymen ... ... ,, 18 each.

* 2 carts in the North Division and 7 carts in the South Division are worked by the Gowkhana cattle.

of Town and Suburbs for the year 1896-97.

Added area peons.	Added area coolies.	Added area domes.	Added area hired carts.	Kutcha ditch peons.	Kutcha ditch coolies.	Added area tindal refuse hired bullocks.	Double and single Gowkhana conservancy carts.	Bustee peons.	Bustee sardars.	Bustee coolies.	Bustee bhistis.	Bustee hired carts.	Bustee tindal for cleansing choked bustee pits.	Coolies for cleansing choked bustee pits.	N. S. peons.	N. S. sarkars.	Privy examiners.	N. S. mates.	N. S. mehters.
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	2	1	4	...	10	2	D ... S 21	2	1	44	3	7	1	2	1	...	...	3	83
...	...	...	...	...	...	...	2 32	2	1	40	3	9	1	2	1	...	...	3	91
1	7	1	6	1	8	3	... 22	2	1	43	4	8	1	2	1	...	...	3	87
1	8	1	7	...	10	3	... 14	2	1	31	3	7	1	2	1	...	...	4	64
...	...	...	...	...	...	...	11 46	2	1	43	3	14	1	2	1	...	...	5	168
...	...	...	...	...	...	...	1 27	2	1	38	2	10	1	2	1	...	...	3	117
...	...	...	...	...	...	...	6 31	1	1	25	6	9	1	2	1	...	...	4	70
3	17	3	17	1	28	8	D 20 S 193	13	7	263	24	64	7	14	7	...	...	25	620
...	...	...	...	...	...	...	D 4 S 28	2	1	48	4	11	1	2	2	...	...	3	102
1	12	1	9	...	9	2	2 24	2	2	46	2	12	1	2	1	...	...	4	87
...	...	...	...	...	...	...	3 16	2	1	34	...	6	1	2	1	...	...	3	55
...	...	...	...	...	...	...	2 14	2	1	37	...	6	1	2	1	...	...	2	70
...	...	...	...	...	...	...	7 19	...	1	5	...	2	...	...	...	...	...	1	2
...	...	...	...	...	...	...	7 22	2	...	37	5	10	1	2	1	...	...	3	46
...	...	...	...	...	...	...	2 14	2	1	35	3	8	1	2	1	...	...	3	67
...	...	...	...	...	...	...	1 11	2	...	30	...	4	1	2	1	...	...	2	34
...	...	...	...	...	...	...	2 14	...	...	4	...	2	...	...	1	...	...	1	4
...	...	...	...	...	...	...	1 8	1	...	12	1	2	1	2	1	...	...	1	12
...	...	...	...	...	...	...	4 2	...	...	11	1	4	...	...	1	...	...	1	18
1	12	1	9	...	9	2	D 35 S 172	15	7	299	16	67	8	16	11	...	...	24	497
...	...	...	...	...	...	...	35	...	...	60	...	...	...	...	1	1	1	...	120
...	...	...	...	...	...	...	18	...	...	25	...	...	...	...	1	1	1	...	100
...	...	...	...	...	...	...	26	...	...	25	...	...	...	...	1	1	1	...	100
...	...	...	...	...	...	...	39	...	...	30	...	...	...	...	1	1	1	...	193
...	...	...	...	...	...	...	...	...	...	20	...	...	...	...	1	1	1	...	70
...	...	...	...	...	...	...	...	...	...	30	...	...	...	...	1	1	1	...	74
...	...	...	...	...	...	...	...	...	...	30	...	...	...	...	1	1	1	...	114
...	...	...	...	...	...	...	118	...	...	220	...	...	...	...	7	7	7	...	771

Working Establishment.

	Rs.	A.	P.	
1,918 Coolies at	5	8	0	each.
37 Trenching ground coolies at	8	0	0	,,
48 Domes ,, ...	5	0	0	,,
161 Bhistis ,, ...	5	0	0	,,
32 Conservancy mehters at	5	0	0	,,
2,146 Mehters at	8	0	0	,,
2 Do. ,, ...	7	0	0	,,
2 Coopers ,, ...	10	0	0	,,
65 Gully-pit boys at ...	3	4	0	,,
6 Ditto ,, ...	4	0	0	,,
1 Lamp trimmer at ...	10	0	0	

Hired Carts.

	Rs.	A.	P.	
129 Bullocks and carters at ...	16	4	0	each.
70 Conservancy carts ,, ...	23	0	0	,,
23 Bullocks and carters ,, ...	18	10	0	,,
92 Carts ,, ...	22	4	3	,,
88 Do. ,, ...	21	8	0	,,
1 Blacksmith ,, ...	15	0	0	
1 Boilerman ,, ...	14	0	0	
6 Stokers ,, ...	14	0	0	each.
8 Topmen ,, ...	10	0	0	,,
6 Ashmen ,, ...	8	0	0	,,
2 Ashcarts ,, ...	23	0	0	,,
55 Double carts (Gowkhana) ,, ...	31	0	0	each.
483 Single carts ditto ,, ...	19	8	0	and Rs. 13-8 each.
17 Dome carts ditto ,, ...	13	8	0	each.

Statement showing the actual strength of conservancy, &c.,

	Port Commissioners' road mehters.	Coopers.	Dalhousie Square mehters.	Dharamtola market mehters.	Depôt mehters.	Free latrine mehters.	Added area night-soil peons.	Added area night-soil mehters.	Added area free latrine mehters.	Hired bulls and carters for night-soils carts.	Trenching coolies.	Trenching sardars.	Hired bulls and carters for sullage carts.	Hired bulls and carters for trade refuse carts.	Hired conservancy carts.	Dome carts.	Tallymen.	Jamadari latrines.	Free latrines.	Night-soil depôts.
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Ward No. 1	...	...	...	...	2	6	...	34	...	...	...	...	...	...	...	1	...	...	3	3
Ditto 2	1	...	...	...	...	6	...	...	...	1	...	...	...	...	...	1	...	1	4	...
Ditto 3	...	...	...	...	3	4	1	25	4	...	...	...	...	...	...	1	...	2	4	3
Ditto 4	...	1	...	...	2	2	1	31	...	...	...	...	...	...	...	1	...	2	1	1
Ditto 5	4	...	...	...	2	6	...	...	...	...	...	...	...	...	...	1	...	4	4	1
Ditto 6	...	...	...	...	3	6	...	...	...	...	...	...	...	...	...	1	...	2	3	1
Ditto 7	...	...	...	...	1	2	...	...	...	...	...	...	...	...	...	1	...	3	3	1
Total ...	9	1	...	...	13	32	2	90	4	1	...	...	...	...	...	7	...	14	22	10
Ward No. 8	...	...	...	...	4	14	...	...	...	...	...	...	...	...	...	1	...	1	7	4
Ditto 9	...	...	...	...	3	2	2	33	...	3*	...	...	...	...	...	..	...	2	1	2
Ditto 10	...	...	...	...	3	8	...	...	...	...	...	...	...	...	...	1	...	3	3	3
Ditto 11	...	...	...	...	1	4	...	...	...	...	...	...	...	...	...	1	...	...	1	1
Ditto 12	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ditto 13	...	1	...	2	2	7	...	...	...	...	...	...	...	...	...	...	...	1	4	2
Ditto 14	...	...	...	...	2	4	...	...	...	...	...	...	...	...	...	1	...	3	2	2
Ditto 15	...	...	...	...	2	2	...	...	...	...	...	...	...	...	...	...	...	...	1	1
Ditto 16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ditto 17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ditto 18	...	...	...	...	2	5	...	...	...	...	...	...	...	...	...	...	...	...	2	1
Total ...	...	1	6	2	19	46	2	33	...	3	...	...	...	...	...	3	...	10	21	16
Ward No. 19	...	...	...	...	...	...	...	...	...	2	...	...	8	5	...	1	1	...	...	1
Ditto 20	...	...	...	...	...	...	...	...	...	4	10	1	9	2	...	1	...	4	...	...
Ditto 21	...	...	...	...	...	...	...	...	...	...	...	...	9	2	...	1	...	1	...	...
Ditto 22	...	...	...	...	...	...	...	...	...	6	23	1	11	2	...	1	1	4	3	...
Ditto 23	...	...	...	...	...	...	...	...	...	8	...	...	6	5	27	1	...	...	...	...
Ditto 24	...	...	...	...	6	...	...	...	...	...	4	...	8	2	19	1	...	1	1	1
Ditto 25	...	...	...	...	...	...	...	...	...	30	...	...	7	3	24	1	...	1	...	...
Total ...	...	...	...	...	6	...	...	...	...	50	37	2	58	21	70	7	2	11	5	2

Superior Supervising Staff.

2	Superintendents	at Rs. 250 each	(including Rs. 50 horse allowance.)
1	Superintendent	,, 350	(ditto 30 ditto.)
1	Assistant Superintendent	,, 230	(ditto 30 ditto.)
1	Inspector	,, 200	
2	Inspectors	,, 150	each
1	Inspector	,, 140	
1	Ditto	,, 130	
18	Inspectors	,, 120	each
1	Inspector	,, 62-8	
1	Assistant Inspector ...	,, 60	
1	Supervisor	,, 30	
1	Time-keeper, Guragatcha Incinerator	,, 12	
1	Officer for Guragatcha Incinerator	,, 120	

Subordinate Supervising Establishment.

118	Peons	at Rs.	7 each.
3	Do.	,,	8 ,,
6	Waggon platform sarkars	,,	12 ,,
14	Sardars	,,	6 ,,
2	Trenching-ground sardars	,,	10 ,,
7	Privy examiners	,,	7 ,,
7	Night-soil sarkars	,,	16 ,,
49	Mates	,,	8 ,,
15	Tindals	,,	10 ,,
2	Time-keepers	,,	16 ,,
1	Tindal	,,	25
2	Tallymen	,,	15 each.

* 2 carts in the North Division and 7 in the South Division are worked by the Gowkhana cattle.

of Town and Suburbs for the year 1896-97—concluded.

Number of privies.	Number of urinals.	Number of gully-pits.	Population.	Area of wards in acres.	Length of drains and sewered ditches in feet.	Area of roads in square feet.	Budge-Budge Depôt time-keepers.	Budge-Budge Depôt peons.	Budge-Budge Depôt gully-pit boys.	Budge-Budge Depôt lamp trimmer.	Guragatcha Incinerator fireel.	Guragatcha blacksmith.	Guragatcha boilerman.	Guragatcha stokers.	Guragatcha topmen.	Guragatcha ashmen.	Cattle-shed peon.	REMARKS.
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
						Sq. ft.												
4,133	3	504	36,885	409	22,490	1,556,311	...	...	...	...	...	...	...	...	...	...	...	
2,358	4	420	26,614	217	9,940	791,799	...	...	...	...	...	...	...	..	...	...	...	
4,003	3	371	36,431	403	20,153	1,350,884	...	...	...	...	...	...	...	...	...	...	...	
3,723	2	377	34 828	320	19,786	1,109,670	...	...	...	...	...	...	...	...	...	...	..	
2,542	9	538	39,180	243	9,232	1,070,888	...	...	...	...	...	...	...	...	...	...	...	
3,642	5	494	41,657	262	28,554	1,063,389	...	...	...	...	...	...	...	...	...	..	...	
1,135	12	543	20,646	217	2,918	1,141,883	...	...	...	...	...	...	...	...	...	...	...	
21,536	38	3,247	236,241	2,071	113,073	8,084,824	...	...	...	...	...	...	...	...	...	...	...	
2,676	11	449	50,781	224	12,818	1,150,442	...	...	...	...	...	...	...	...	...	...	1	
4,071	3	493	49,472	460	15,896	1,475,372	...	...	...	...	...	...	...	...	...	...	...	
1,406	2	255	22,668	147	6,124	594,758	...	...	...	...	...	...	...	...	...	...	...	
2,073	4	325	20,761	166	10,964	842,838	...	...	...	...	...	...	...	...	...	...	...	
257	5	310	6,083	211	...	932,861	...	...	...	...	...	...	...	...	...	...	...	
1,301	7	466	28,366	192	6,360	979,675	...	...	...	...	...	...	...	...	...	...	...	
2,222	2	331	29,207	198	13,438	918,504	...	...	...	...	...	...	...	..	...	...	...	
1,607	2	284	13,218	179	6,686	665,847	...	...	...	...	...	...	...	...	...	...	...	
289	1	287	4,620	153	...	883,283	...	...	...	...	...	...	...	...	...	...	...	
303	1	230	4,598	128	...	835,537	...	...	...	...	...	...	...	...	...	...	...	
327	1	97	4,820	108	...	448,108	...	...	...	...	...	...	...	...	...	...	...	
15,932	39	3,527	234,594	2,166	72,286	9,736,225	...	...	...	...	...	...	...	...	...	...	...	
3,342	...	91	33,147	1,062	161,418	2,432,939	...	...	...	...	...	...	...	...	...	...	...	
2,358	...	9	23,020	800	184,040	1,350,495	...	...	...	...	...	...	...	...	...	...	...	
2,839	...	18	22,831	2,022	334,555	3,196,330	...	...	...	...	...	...	...	...	...	...	...	
5,839	1	20	42,591	838	194,224	2,435,189	...	...	...	...	...	...	...	...	...	...	...	
1,548	...	...	14,804	1,241	148,123	2,293,818	...	...	...	...	...	...	...	...	...	...	...	
2,176	...	...	15,340	921	166,929	1,803,722	2	2	6	1	1	1	1	6	8	6	...	
2,509	...	...	26,883	729	113,089	1,823,931	...	...	...	...	...	...	...	...	...	...	...	
20,611	1	138	178,566	7,613	1,302,378	16,336,424	2	2	6	1	1	1	1	6	8	4	1	

Working Establishment.

		Rs.	A.	P.	
1,918	Coolies at	5	8	0	each.
37	Trenching ground coolies at	8	0	0	,,
48	Domes ,, ...	5	0	0	,,
161	Bhistis ,, ...	5	0	0	,,
32	Conservancy mehters at	5	0	0	,,
2,146	Mehters at	8	0	0	,,
2	Do. ,, ...	7	0	0	,,
2	Coopers ,, ...	10	0	0	,,
65	Gully-pit boys at ...	3	4	0	,,
6	Ditto ,, ...	4	0	0	,,
1	Lamp trimmer ,, ...	10	0	0	

Hired Carts.

		Rs.	A.	P.	
129	Bullocks and carters at ...	16	4	0	each
70	Conservancy carts ,, ...	23	0	0	,,
23	Bullocks and carters ,, ...	18	10	0	,,
92	Carts ,, ...	22	4	3	,,
88	Do. ,, ...	21	8	0	,,
1	Blacksmith ,, ...	15	0	0	
1	Boilerman ,, ...	14	0	0	
6	Stokers ,, ...	14	0	0	each.
8	Topmen ,, ...	10	0	0	,,
6	Ashmen ,, ...	8	0	0	,,
2	Ash carts ,, ...	23	0	0	,,
55	Double carts (Gowkhana) at	31	0	0	,,
483	Small carts (Gowkhana) at	1	8	0	and Rs. 13-8 each.
17	Dome carts (Gowkhana) at	13	8	0	each.

C. BANKS, M.D.,

Supdt.-in-Chief.

APPENDIX IV—C.

No. 43, dated Calcutta, the 30th November 1896.

From—Surgn.-Capt. J. C. S. Vaughan, M.B. (Edin.), Secretary, Medical Board,
To—The Secretary to the Government of Bengal, Municipal Department.

I am directed by the Medical Board appointed by the Government Resolution No. 937T.M., dated the 10th October, to state that, at a meeting held by them on the 22nd October, the Board issued instructions to the five Sanitary Officers, whose services had been placed at their disposal, to make a sanitary survey of the town proper of Calcutta with reference to certain main points, and to report the results. Similar instructions were issued to Surgeon-Captain Pilgrim, then Civil Surgeon of the 24-Parganas, in respect of the area added to Calcutta by Bengal Act II of 1888. I am now to submit, for the information of His Honour the Lieutenant-Governor, copies of the reports of these officers. Their description of the insanitary condition of parts of Calcutta is borne out and supplemented by other evidence which has come before the Board and by the personal observation of its members. The reports disclose a state of things which, in the opinion of the Board, constitutes a standing menace to the health of the city, and may seriously affect the commercial relations of the port with foreign countries. They indicate a complete failure on the part of the Health Department of the Corporation to carry out the ordinary operations of town conservancy, and the Board propose to make a full and searching enquiry into the causes of this failure, taking in the first place the evidence of the officers of the Corporation and calling for such further evidence as they may find necessary to enable them to arrive at a conclusion. They understand from the Lieutenant-Governor's speech on Thursday last that His Honour desires them to adopt this course, and I am to ask that formal orders may now be conveyed to them.

2. As regards the measures which should be adopted to remedy the state of things now reported, I am to say that these are of two kinds—large structural changes which will take time to carry out and will involve considerable expenditure, and possibly legislation, and minor reforms which admit of immediate execution. On the larger schemes, such as the opening out of new streets and lanes, and the introduction of a Building Act, the Board propose to submit a full expression of their opinion later on, but they think that the following measures admit of being carried out at once, and they are recommending the Corporation to adopt them:—

I. Pollution of the subsoil.—The Board are satisfied from evidence which has come before them and from their personal observation that owing to the neglect of street-cleansing the surface of the roads, lanes, and *galis* in Calcutta has become polluted to a dangerous extent. This cause, rather than the condition of the main sewers, is, the Board believe, answerable for the foul smells which are so frequently complained of, and they are further of opinion that in several cases of tetanus which have occurred the disease was traceable to persons falling and cutting themselves on soil impregnated with poisonous germs. It has been suggested that, in order to purify the surface of the roads, they should be watered with a mild solution of phenyle. This they consider would be useless, costly and offensive. But they desire to recommend to the Corporation the immediate adoption of a measure suggested by Dr. Cunningham—that all roads and lanes accessible to water-carts be watered once a week with a solution of one part of perchloride of mercury to five thousand parts of water.

The Board believe that this will have the effect of permanently purifying the soil by killing the noxious germs now present in it, and preventing the growth of fresh germs. The cost will be moderate, and if the roads are properly cleaned and scraped in future, the benefit will be permanent. I am to explain at the same time that metal water-carts cannot be used for this purpose, and that the watering should be done from wooden barrels, fitted with pipes of perforated bamboo, which can be put on ordinary bullock carts. The Board think that Messrs. Waldie and Company of Cossipore will probably be able to supply crude commercial perchloride locally manufactured at a very low rate.

II. Disposal of house-refuse.—The Board wish to invite the attention of the Corporation to section IV of the Sanitary Officers' report and to the provisions of section 298 of the Act. In their opinion the polluted condition of the streets is largely due to the fact that in many parts of the town no system of putting out house-refuse at regular hours is properly enforced.

III. Overcrowding of houses.—This is dealt with in section I of the Sanitary Officers' report. The Board suggest that in all such cases resort should be had to the provisions of sections 320 and 385 of the Act.

IV. Public latrines.—The Board recommend that as soon as a larger supply of unfiltered water is available, the number of public latrines and urinals be greatly increased, sufficient separate accommodation being provided for females. It is understood that Messrs. Burn and Company of Calcutta can supply a pattern of latrine seat made of glazed Jubbulpore clay which has been found to answer well in Cawnpore and other large cities in Northern India. These, or some equally efficient model, might at once be substituted for the existing latrines, which are reported to be in a hopelessly dilapidated and filthy condition.

V. Private privies.—The Board recognise that the question of dealing with private privies in Calcutta, as in all eastern towns, is one of considerable difficulty; but before pronouncing any final opinion on the subject, they wish to be furnished with full information as to the action already taken by the Corporation in the matter. I am to point out that the state of things described in the report is a source of very serious danger to the public health.

VI. House-connections and house-drains.—I am to ask that the Board may be supplied with a copy of all regulations bearing on this subject, and that in the meantime steps may be taken to put in order all drains and connections which are now out of repair.

VII. Surface-drains.—From the description given of the surface drains it is evident that they are not constructed of suitable materials, and also that their alignment is unsatisfactory, no sufficient fall being provided to carry off the sullage water into the main sewers. As a matter of fact the so-called drains are in many instances nothing more than cess-pools, in which the filth from the streets and from latrines, which are directly connected with them, is allowed to accumulate and ferment.

VIII. Sanitary condition of compounds and courtyards of houses.—The Medical Board have ascertained by personal inspection that the account given by the Sanitary Officers of the condition of compounds and courtyards of houses is in no way exaggerated. They are unable to understand how such a state of things can have been allowed to arise, and they would urge that action should at once be taken under sections 317 and 318 of the Act to inspect and cleanse all such insanitary premises.

IX. Wells in courtyards of houses.—The Board have also personally ascertained that in the courtyards of many houses wells exist under conditions which practically ensure that the water must be constantly polluted by sewage. They suggest that the water of all such wells should be analysed; and if it is found to be unfit for use, the wells should be closed under section 315 of the Act.

X. Cowsheds and stables.—The Board are not prepared to support the recommendation that all cows and cowsheds should be removed beyond Municipal limits, but they think that immediate action should be taken to enforce the provisions of section 286, which gives the Corporation the fullest control over the site, material, dimensions and construction of all cowsheds and stables.

The Board would add that in their opinion the paving of all hackney carriage stands should be taken in hand as soon as possible.

3. In a separate report of this date the Board have expressed the opinion that there is no evidence to show that any case of plague has yet occurred in Calcutta. They desire to add that, if from any cause the germ of the disease should be imported from Bombay, it would find in Calcutta conditions peculiarly favourable to its propagation.

APPENDIX IV—D.

No. 4526Med., dated Calcutta, the 1st December 1896.

From—H. H. RISLEY, ESQ., C.I.E., Secy. to the Govt. of Bengal, Munepl. Dept.,
To—The Secretary, Medical Board.

I AM directed to acknowledge the receipt of the letter of the Medical Board, of yesterday's date, submitting the report of the five Sanitary Officers and the Civil Surgeon of the 24-Parganas upon the results of the sanitary survey of Calcutta and the added area, made under the directions of the Board. The Lieutenant-Governor entirely agrees with the Board, and has already publicly declared, that the state of things disclosed constitutes a standing menace to the health of the city, and indicates a lamentable failure on the part of those responsible for the town conservancy. The Lieutenant-Governor would be glad if the Medical Board would make a full and searching inquiry into the causes of this failure, and report the result to Government. His Honour feels sure that the propriety, and indeed the necessity, of such an impartial inquiry will be generally admitted. The Lieutenant-Governor has complete confidence that the Corporation, both through its executive and collectively, will give every assistance to the Board in arriving at a correct conclusion, and will face the task of cleansing the town with a firm determination to allow nothing to come in the way of this.

2. The Lieutenant-Governor has himself an entirely open mind on the question of responsibility. It is a mistake to suppose that in his speech at the initiation of the drainage works, he intended to declare that the executive of the Corporation was blameless in the matter of the sanitary and other shortcomings of the city, and that the general body of Commissioners was alone to blame. For the state of some departments, such as the Warrant Department, there can be little doubt that the executive is largely responsible. It was His Honour's intention to stir up the Commissioners to take vigorous action to remedy the gross evils brought to light by the sanitary reports, and to point out various matters which in his judgment called for scrutiny and reform, but he carefully refrained from deciding to whom or to what feature in the municipal arrangements the blame is to be imputed for particular shortcomings. The Lieutenant-Governor considers (and said) that the constitution of the

Municipality is not in itself calculated to promote the rapid disposal of work or to fix responsibility; that there has been at times undue interference with the executive, which ought, in a city like Calcutta, to be strong and well organised; and that there has been great remissness in working the existing building regulations. Sir Alexander Mackenzie believes that his views on these points have been held by every Lieutenant-Governor since the Corporation came into existence. But the questions before it and the Government at the present time are eminently practical, viz, what steps are necessary to remedy the existing foul state of the city and to prevent its recurrence On these points the Lieutenant-Governor desires to have the advice of the Medical Board before he addresses the Corporation.

3. He understands that the Medical Board have themselves addressed the Corporation regarding the measures detailed in their letter, which ought, in their opinion, to be taken in hand at once. The Lieutenant-Governor trusts that the Corporation will respond promptly and heartily to the Board's suggestions, and insist on effect being given to them.

4. The Board should apply to the Corporation direct for copies of the regulations on house connections, and for any other information which they may require.

APPENDIX IV—E.

No. 125, dated Calcutta, the 9th December 1896.

From—Surgeon-Captain J. C. S. Vaughan, Secretary, Medical Board,
To—The Chairman of the Corporation.

In continuation of my letter No. 43, dated 30th November 1896, suggesting the early adoption of certain measures of conservancy, I am directed to address you further on the subject of the inquiry which the Board are now conducting into the sanitary condition of the town of Calcutta. The Board commenced that inquiry under the authority conferred upon them by the Government Resolution No. 937T.—M., dated Darjeeling, the 10th October 1896, when it was believed that an outbreak of bubonic plague was imminent. In order to determine what steps should be taken to guard against such a disaster, the Board deputed a number of medical officers to examine the actual condition of the town and report on its sanitary requirements. The report of these officers has disclosed the existence of very serious evils, into the causes of which the Board have been directed by Government to make a full and searching inquiry, the results of which will complete their general inquiry into the liability of Calcutta to an invasion of the plague which is now rapidly gaining strength in Bombay.

2. The facts may be summarised as follows:—

I.—Overcrowded and badly built houses.—In many parts of the town both *pucka* houses and *bustee* huts are dangerously overcrowded and are built in a manner which renders proper ventilation and efficient conservancy almost impossible.

II—Defects of public latrines.—The public latrines are deficient in number, faulty in construction, and imperfectly cleaned.

III. Defects of private latrines.—The private latrines are in many cases so constructed that they cannot be properly cleaned, nor can the conservancy officers get access to them; and consequently many of them are choked with accumulations of filth.

IV.—State of house drains and down-pipes.—The house drains and down-pipes are in many cases broken, choked, and out of repair.

V.—State of surface drains.—The surface drains are blocked with foul matter, latrines are allowed to discharge into them, and the drains themselves are often used as latrines.

VI.—Neglect of road scavenging.—The scavenging of the roads is imperfectly carried out; the staff is inadequate for the work; and the subsoil has become dangerously polluted.

VII.—State of compounds and courtyards.—The condition of the compounds and courtyards of houses is in many cases extremely filthy.

VIII.—Pollution of wells.—Wells in courtyards are contaminated by the percolation of sewage impurities from the soil.

IX.—State of cowsheds and stables.—Cowsheds and stables are situated in thickly populated places; their construction is faulty; they are greatly overcrowded, and their flooring is soaked with sewage which pollutes the wells on the premises.

X.—State of hackney carriage stands.—Hackney carriage stands are badly constructed and not properly cleaned.

XI.—Condition of bustees.—*Bustees* are badly drained and imperfectly ventilated; the huts are too close together; the latrine arrangements lead to the pollution of the soil; the roads and lanes are too narrow, and conservancy is imperfectly carried out.

3. In view of these facts, I am to ask that, with the permission of the Commissioners, you will furnish any information that may be forthcoming in explanation of the apparent failure of the Health Department to deal effectively with the state of things described above; and will forward that information to the Medical Board, with an expression of the opinion of the Corporation, and with such remarks by yourself as may appear to be called for.

Copies of all papers referred to should be annexed. The points to which the Board desire especially to invite attention are indicated in the following questions:—

(1) Are the facts correctly stated in the reports of the Sanitary Officers and the Civil Surgeon of the 24-Parganas?

(2) Have these facts been reported to the Commissioners by the Health Officer, and with what results?

(3) Is the law, as it stands, sufficient to enable the Commissioners to deal with the facts reported?

(4) Is the law enforced, and if not, why not?

(5) What duties have been assigned to the Health Officer under section 41 of Bengal Act II of 1888? Have these duties been duly carried out?

4. Finally, I am to express the hope that the Commissioners, who have already shown a laudable desire to co-operate with the Medical Board in respect both of special measures of conservancy and of the regulations recently passed under section 334 of the Act, will furnish the Board, at as early a date as possible, with all the information necessary to enable them to complete the present inquiry.

APPENDIX IV—F.

No. 5778, dated Calcutta, the 22nd December 1896.

From—The Officiating Secretary to the Corporation of Calcutta,
To—The Secretary to the Medical Board, Calcutta.

I AM directed to acknowledge the receipt of your letter No. 125, dated the 9th instant, regarding the conservancy of the town, and to state that your letter was considered by the General Committee on the 18th instant. I forward a copy of their resolution for your information.

Copy of resolution passed on the General Committee held on the 18th December 1896.

1. That the Commissioners thank the Medical Board for their report, and they are willing to give due weight and attention to their recommendations.

2. That the Commissioners will always be ready and willing to give such information as the Medical Board may call for to enable them to make recommendations for the sanitary improvement of the town.

3. That the Commissioners respectfully decline to consent to the Medical Board being constituted judges between them and their officers.

4. That the Sanitary Officer's report be forwarded to the Engineer and to the Health Officer for a report to be submitted to the General Committee.

APPENDIX IV—G.

No. 155, dated Calcutta, the 31st December 1896.

From—The Secretary to the Medical Board,
To—The Secretary to the Government of Bengal, Municipal Department.

IN accordance with the instructions conveyed in Government Order No. 4526Med., dated the 1st December 1896, the Medical Board, in their letter No. 125 of the 9th idem (copy enclosed), addressed the Calcutta Corporation, asking to be furnished with certain information regarding the insanitary condition of the town of Calcutta, I am directed by the Board to submit, for the information of Government, a copy of the reply which has been received from the Corporation to the communication referred to above.

2. It is seen that the General Committee in effect refuse to furnish any information as to the causes of the insanitary condition of the town. They are, it seems, enquiring into the subject, but the Board infer that they do not intend to furnish them with the result of their enquiry. It follows, therefore, that the Medical Board cannot proceed in the manner suggested in Government letter quoted above.

APPENDIX IV—H.

No. 204, dated Calcutta, the 20th January 1897.

From—W. B. GWYTHER, Esq., Secretary, Medical Board,
To—The Secretary to the Government of Bengal, Municipal Department.

I AM directed by the Medical Board to report that it has come to their notice that, in consequence of the spread of plague in and near Bombay, and the increasing probability of

the disease reaching Calcutta, serious anxiety is felt here by the inhabitants and by those who are interested in the trade of the town. On the 30th November last, the Board made certain specific recommendations for the cleansing of the city from the accumulation of filth reported by the Sanitary Officers. Their objects in doing so was to save time, as they felt that, directly plague broke out, labour would desert the city, so that whatever was to be done must be done quickly. They have, however, no means of knowing what action has been taken by the Commissioners in the matter, and, so far as their information goes, they doubt whether the extra establishment employed by the Corporation, which is believed to consist of 1 Superintendent, 2 Inspectors, 200 coolies, and 60 small carts, is nearly sufficient for the purpose. In these circumstances, I am directed to request that the Commissioners may be called upon to state at once what they have actually done to prevent an outbreak of plague in the town, and that if the measures adopted by them are found to be inadequate, they may be ordered, under section 38 of Act II (B.C.) of 1888, to appoint a special staff large enough to deal at once and effectively with the masses of filth and refuse of various kinds which have accumulated in many parts of Calcutta.

2. The Medical Board observe that, at the General Meeting of the Commissioners held yesterday, the Chairman stated that 600 of the worst houses in Burra Bazar and Jorabagan had been cleansed and disinfected, but that a second cleansing was necessary, and those wards would have to be done over again. For these two wards alone, 200 extra coolies and 40 carts would be required. He added that similar deposits of filth existed in Coloqtollah, Jorasanko, Burtola, Entally, Taltola and Puddopokur. If this is a complete account of the action taken by the Corporation to cleanse the town of Calcutta and guard against a visitation of the plague, the Board are constrained to remark that surprisingly little has been done. So long ago as the 30th September last, when plague first appeared in Bombay, the Commissioners were warned by the Government that they should "take every reasonable precaution to prevent any outbreak of the disease in Calcutta." Nearly four months have now passed, and although during that time the Commissioners have been informed of the existence of vast accumulations of filth, and of the prevalence of conditions specially favourable to an outbreak of plague, the staff appointed by them to remove the cause of this great public danger is, on their own showing, only sufficient to deal—and that, it would seem, imperfectly—with two out of the eight wards in which deposits of filth exist. In six wards nothing at all appears to have been done; in two, what has been done will have to be done over again. For reasons which the Lieutenant-Governor is aware of, the Board are not in a position to say who is responsible for the patent inadequacy of the measures said to have been adopted to guard against the most formidable calamity that can befall the inhabitants and the commerce of this city. But if the facts are as stated, they venture to urge that the time has now come for Government to intervene, either by issuing an order under section 38 of the Municipal Act, or if that procedure is thought likely to lend itself to further delays, by passing a special Act to meet the present emergency.

APPENDIX IV—I.

No. 6492, dated Calcutta, the 1st February 1897.

From—H. C. Williams, Esq., Chairman of the Corporation of Calcutta,
To—The Secretary to the Government of Bengal, Municipal Department.

In continuation of my letter No. 109 of the 16th instant, and with reference to your letters Nos. 96, 97 and 163, of the 7th, 8th and 12th instant, I have the honour to state that the Sub-Committee appointed by the General Committee on the 15th instant, held two meetings to discuss the letters referred to and also the letters Nos. 43 and 125, from the Medical Board to the Secretary to the Government of Bengal, and to the Chairman, Calcutta Corporation, dated 30th November and 9th December last. They also duly considered the notes drawn up by the Health Officer and the Chief Engineer with regard to these letters, as well as the Sanitary Inspector's Report on Calcutta and Kidderpore and Watgunge, which led to the whole correspondence.

2. With regard to the questions asked in letter No. 97, the following replies will show to what extent the facts stated in the Sanitary Officer's and Civil Surgeon's reports are correct.

(*a*) *Overcrowded and badly built houses.*—The general statements made under this head are mainly correct, but it is to be noted that most of the houses and huts alluded to by the Medical Board were constructed before the present rules came into force. The suggestions made by the Medical Board are approved of, and the Chairman has prosecuted two cases lately under section 320 of the Municipal Act. The procedure, however, under this Act is not of a summary nature, and some time elapsed in one case before final orders could be obtained from the court.

(*b*) *Defects of public latrines.*—These defects are fully admitted, and will be remedied as soon as the unfiltered water-supply is increased. It is to be hoped that this will be accomplished in 6 to 9 months. The pipes are arriving, the engine boilers are expected in a week, and one out of four sets of more powerful engines is on the way out from England for Mullick's ghat station. This will benefit very much the town supply, and the engines at present in use will be removed and set up in the suburbs, as soon as the site for them is finally settled. New latrines and urinals are being gradually built, and more sites have been selected.

(*c*) *Defects of private latrines.*—In the opinion of the Commissioners the state of things described by the Medical Board is not common in pucka houses, except in those of old standing, and as regards privies in bustees, they would remind Government that previous to 1884 there were practically no privies in bustees at all. As soon as the unfiltered water-supply is increased, notices will be served upon the owners of houses in which there are bad privies to have them connected with the sewers. The Commissioners think it also necessary to add that, in the case of some poor people, the Commissioners have paid from Municipal funds for the connection of their privies with the sewers. Paragraph 3 of the Health Officer's notes deals fully with this subject.

(*d*) *State of house drains and drain pipes.*—It is fully admitted that these are in many cases choked and out of repair, but an establishment of nine Inspectors is kept up for the inspection of house drainage. With reference to the accuracy of the statements made in the Sanitary Officer's Inspection Reports, the Commissioners would call attention to the Health Officer's remarks regarding 33, Muktaram Babu's Street, which show that there was no direct communication between the house drain and the public sewer, and that, as a matter of fact, no direct connections are allowed. Attention is invited to paragraph 10 of the Chief Engineer's note, and a copy of the regulations on the subject is attached. Since November the House Drainage Department has served 1,000 notices, and departmental action has been taken in 150 cases.

(*e*) *State of surface drains.*—The Commissioners are not prepared to admit the general statement that latrines are allowed to discharge into surface drains. Occasionally it is found that such a practice exists. With reference to paragraph 3 of the Sanitary Officer's Report, they would call attention to paragraph V of the Health Officer's note (a copy of which is sent herewith) on the surface drains and to paragraph 20 of the Chief Engineer's note (sent herewith).

(*f*) *Neglect of Road Scavenging.*—As regards the sufficiency or not of the staff, there is a considerable difference of opinion, and the whole question has attracted the careful attention of the Commissioners. As regards the question of the pollution of the sub-soil, although there is no doubt that in certain places this is the cause of many most noxious smells, yet it is a matter of doubt whether in many cases it is not the sewers which are mainly responsible. As to the means suggested to minimize the evils of pollution, it will be observed, from paragraph XII of the Health Officer's note, that he is strongly opposed to the use of perchloride of mercury, and that in the face of such opposition the Commissioners have not hitherto thought it advisable to give this experiment a trial. The Commissioners would also invite attention to the remarks made in the first paragraph of the Chief Engineer's note. They would also call attention to the fact that carbolic acid and phenyle are being used in the narrow gullies and passages and surface drains of the city.

(*g*) *State of compounds and court-yards.*—The Commissioners generally differ very much from the remarks of the Medical Board on this subject, if they are intended to apply generally to all localities; but they fully admit their applicability to wards 5 and 7 (Burra Bazar and Jorabagan) as a whole, and for this reason have allotted to those wards a special establishment. Action is being persistently taken under section 318.

(*h*) *Pollution of wells.*—With regard to this, the Commissioners wish to point out in recent years a very large number of wells has been filled up, and this filling up will be proceeded with as soon as the water of the wells has been analysed and the increased supply of unfiltered water provided. The Commissioners are of opinion that, if the existing wells are filled up before this is done, very great hardship will be suffered by many householders.

(*i*) *State of Cowsheds and Stables.*—Although a great deal undoubtedly remains to be done in the question of improving these, latterly there has been a most decided improvement in some instances, and it is to be believed that recent modifications in the bye-laws will lead to still further improvement. The Commissioners would point out that one great difficulty in dealing with this question is caused by the fact that the Goalas themselves are as a rule not the landlords, and the land-owners will not make any improvements. In this connection the Commissioners would invite attention to paragraph IX of the Health Officer's note, and especially to the remarks at the top of page 7, which show the impossibility of working section 286. Section 335 is the section under which prosecutions under the bye-laws are made.

(*j*) *The state of Hackney Carriage stands.*—The Commissioners are fully aware of the bad state of these stands, and scarcity of money has alone prevented them from making many of the improvements required.

(*k*) *Condition of Bustees.*—The Commissioners fully admit that there is a great deal of room for improvement in bustees, but they would call attention to the fact that a great deal has lately been done, and that improvements are being steadily pushed on. More money than is required by the law to be spent on this head has been spent.

(*l*) *Disposal of house refuse.*—With reference to this, the Commissioners would invite attention to paragraph 13 of the Health Officer's note. Considerable difficulty is experienced in inducing native house-owners to allow the retention of the refuse food on their premises during the day, and it will be probably necessary to amend the Act on this subject.

3. In reply to the second question in paragraph 3 of letter No. 125 of 9th December, the Commissioners desire me to say that the details reported by the Sanitary Commissioner have not been placed before the Commissioners, but, as regards the general condition of the town, its defects and the steps required to remedy the defects, the Health Officer has from time to time submitted reports, and these have been dealt with, and in general, steps have been taken

to improve the condition of the town as far as possible. With regard to the suburbs and the suburban area, the Commissioners would call the attention of Government to the fact that much improvement has been practically impossible, owing to the want of a proper system of drainage; but the obligation to spend the statutory three lakhs has been carried out since the time of the amalgamation.

4. As regards the third question, it is generally admitted that the law is insufficient to deal with the various matters brought forward, but there is considerable difference of opinion as to the nature and amount of amendment required.

5. With reference to the enforcement of the law, the Commissioners would state that it is enforced as far as it can be, but as regards the question of overcrowding, they would remark that, in comparing the statistics of Calcutta with those of London, it should not be forgotten that a considerable number of the inhabitants in crowded wards of the former city sleep in verandahs and open places.

6. In reply to the fifth question, the Commissioners beg to forward a copy of the orders passed by the Chairman under section 61, showing the powers vested in the Health Officer. The power to execute work, however, under section 286 is not granted beyond the amount of Rs. 25. The Commissioners, however, desire to mention that as regards the duties of conservancy there has been always a difference of opinion between them and the Health Officer as to how far he has done his duty. There are a large number of Commissioners who consider he has not duly exercised his power of control and supervision of conservancy, and he insists that he should have a Chief Superintendent under him. But it was only lately that he raised a protest as to the responsibility for the conservancy of the town.

7. I would mention in conclusion that the proceedings of the Sub-Committee have not yet been confirmed by the General Committee, before whom this letter will be laid; but as it is required that a report should be sent to Government as soon as possible, I have thought it inadvisable to delay this reply any longer.

HEALTH OFFICER'S REPORT IN REPLY TO MEDICAL BOARD'S LETTERS OF 30TH NOVEMBER AND 9TH DECEMBER LAST.

Memo. on the letters of the Medical Board.

From—W. J. SIMPSON, ESQ., Health Officer to the Corporation of Calcutta,
To—The Chairman of the Corporation of Calcutta.

WITH reference to the letter of the Medical Board, dated 9th December 1896, I have the honour to submit the following report on the particular points raised in the letter regarding the sanitary condition of Calcutta. I shall follow the order adopted by the Board in their summary, which is as follows:—

I.—OVERCROWDING AND BADLY-BUILT HOUSES.

This question is exhaustively dealt with in my note on the sanitation of Calcutta submitted with this report. The subject has, owing to the representations of the Health Officer, engaged the attention of the Commissioners for the past 10 years, and is now advanced to such a stage as to be beyond discussion. There can be no doubt that a good Building Act is required, and without such an Act neither overcrowded nor badly-built houses can be prevented. It is only by the provision of broad streets and a rigid regulation of the distribution of houses, with a view to their efficient ventilation and circulation of air around them, in order that too many houses may not be built on too limited a space, that the overcrowding of houses and overcrowding of the inhabitants can be effectively controlled by a Municipality.

As regards overcrowding of the inmates of houses and huts in Calcutta, it may be stated that 50 per cent. of the houses in Jorabagan, Burra Bazar, Jorasanko, Colootollah, and portions of Coomertolly, Fenwick Bazar, Entally, Toltollah, Baniapooker, Bhawanipur, and Watgunge are overcrowded, and to prevent this overcrowding it would be necessary to dislodge about half the inhabitants in these localities. No application of any section in the Act would be of any practical utility in reducing this overcrowding, and it would only be advisable to attempt it in special cases when a dangerous disease had broken out in the house. In any new Act the cubic space per individual should be defined for tenement houses and huts. Section 320 of the existing Act, which is intended to deal with overcrowding, does not apply to huts, but to buildings. Section 393 gives no right of entry during the night, which is the only time that overcrowding can be correctly ascertained. The special instances of overcrowding in Russick Lall Lane, given in the Sanitary Officer's report, are no doubt correct, but to show the difficulty of proof, it happened on the occasion of the Health Officer's visit that most of the rooms were unoccupied, but probably if the visit had been made at night the overcrowding would have been found to be even greater than that reported. An inspection cannot be made under existing conditions against the will of the occupiers without 24 hours' notice, which would defeat the object of enquiry if it was once known what these inspections were intended for. There is moreover no penalty for overcrowding, and there is no minimum cubic space per person fixed by the Act. The Health Officer on suggesting a prosecution as a test case was advised by the Municipal Pleader to first get the minimum cubic space fixed by a bye-law. The Health Officer on the 15th

September 1893 framed a bye-law which was ordered by the Chairman to be placed on the Buildings Bye-law Revision File. Section 385 includes a hut, but is unworkable for the same reasons. Even if full powers were given to enter occupied premises at night, they should only be exercised by the Police. Sections 320 and 381 are taken from an English Act, and in that country are applied as a rule only to common lodging-houses and to exceptional tenemented houses, which, by reason of the habits of the inhabitants who occupy them, are subjected to special surveillance. These form a very small proportion of the houses in a large town elsewhere, but in Calcutta they on the contrary form a very large proportion. It is for these reasons that the Health Officer has always advocated a Building Act to reduce overcrowding of buildings and overcrowding of inhabitants.

II.—PUBLIC LATRINES.

There can be little doubt that a larger number of public latrines and urinals are required. Recently two large latrines—one with 16 seats for men and one with 12 seats for women, also a 4-seated urinal—were erected at Kalighat on the recommendation of the Health Officer. The Health Officer recommended these latrines in September 1893, and they were commenced about two years afterwards. The seats are of Donaldson's pattern, which is by far the best type in India for native latrines, and are of glazed earthenware, while the whole understructure of the latrines is of glazed brickwork. It will be seen, therefore, that the recommendation of the Medical Board as to latrine seats of glazed clay is one with which the Municipality agrees, and has been carrying out for some years. Several years ago 14 sites were selected by the Health Department for public latrines and urinals, but the financial condition of the Corporation at the time did not permit of their construction. More recently four sites were selected by the Health Officer, and the question is still under consideration. The annexed Loan Budget of 1893-94 (exhibit A) will show that the question of providing public latrines, urinals, and discharge depôts for the suburbs to replace the trenching-grounds was not forgotten or neglected by the Health Department. In the same budget will be seen a recommendation to allot Rs. 30,000 annually for the systematic filling up of tanks. Suggestions have been made by the Health Department to acquire some of the worst *jamadari* latrines, which are the property of private persons who charge for their use, remodel them, and convert them into free public latrines. Such a course was recommended with the view of providing a larger number of free latrines and abolishing the insanitary *jamadari* latrines. Suggestions have also been made to erect latrines on a modern principle along the river bank north of Howrah Bridge, which is much crowded during the day.

Those latrines which were found faulty in construction by the Sanitary Officer are old. Many old latrines, however, have been replaced by those of a modern type; for instance, the foul-smelling latrines and urinals in Dalhousie Square were replaced by Macfarlane's on the Health Officer's suggestions and according to his design. Necessarily those latrines which are in a dilapidated condition cannot be cleansed so thoroughly as could be wished; but as a rule they are kept fairly clean, one and two mehters being kept at each night and day, and after the rush of the morning is over the mehters thoroughly wash down and disinfect the latrine with phenyle or carbolic acid. It is no fault of the Health Department that these latrines and depôts are in an unsatisfactory condition, for they have been repeatedly reported on and recommendations made for their repair.

III.—PRIVATE LATRINES.

With reference to private latrines, a peculiar feature of Calcutta, causing it to differ from most other sewered towns, is that, though it is a sewered town, yet only 5,000 latrines are connected with the sewers, and the mehter system prevails to-day more extensively than at a period before the drainage system was introduced. In this respect, therefore, the drainage system has not advanced the sanitation of the town, and not fulfilled one of the objects for which it was constructed. Some 52,000 private latrines require to be cleansed every day by means of a large establishment of mehters. This of itself is a work of much magnitude, and were the latrines of the best pattern would, to be done properly, require very close supervision by thoroughly reliable inspectors. Under contrary conditions the result is obvious. As things exist, an enormous number of these latrines are of a primitive character, many of them belonging to exceedingly poor people, and it is a work of time to abolish the latrines and replace them by sanitary structures.

It is only by steady, systematic, and unthwarted action that a thorough impression can be made. Where the people are very poor, an attempt is being made to compel the owner of the bustee to construct ranges of latrines. A set of Donaldson's cheap latrines were some months ago erected in Purbibagan bustee at 5, Alipore Lane, and in other localities under section 294. The latrines are excellent and cheap, but there has been a difficulty in realising the money from the bustee owners. For private latrines standard plans have been adopted, and no new latrine is allowed to be built unless it conforms to that plan. In order that applicants may have every facility in understanding what is required of them, models of Donaldson's latrines have been built in the Health Office compound for their inspection. A copy of the official sanction (Exhibit B) is annexed.

With reference to the old types of latrines, their insanitary nature was brought before the Commissioners in a note on the subject on 25th February 1888, when it was recommended that none of these latrines should in future be permitted, and those now existing should, as far as possible, be remodelled; the note was also included in the Health Officer's annual report for 1888, and photographs of the different types given. The result of this note was

that several model latrines were erected at Municipal expense, and the best form was found to be connected latrines detached from the house and only connected by a passage, and this is being insisted on by the Health Department in new connected latrines. None of the kind described in the note of 1888 have ever been sanctioned by the Health Officer since that date. He has refused to have anything to do with such abominations, and only a few have been sanctioned during the past eight years by the Commissioners themselves; a fair number of them has been remodelled and converted into connected latrines, but progress in this direction is stopped by an insufficient unfiltered water-supply, whilst for a very large number of them nothing short of demolition of the latrine, as well as the whole or part of the house, can effect any improvement. It is impossible under existing, or indeed under any circumstances for these types of latrines to be properly cleaned. The fault of their being in a filthy condition does not lie with the cleansing staff. The sanitary officers have in no way exaggerated their terrible condition, but it is doubtful whether they have in their report described them in such strong measures of condemnation as has been done by the Health Officer. Demolition of the latrine and the house is frequently the only improvement that is possible, while to improve the remainder an ample unfiltered water-supply requires to be provided.

As regards connected latrines, the charge of these is with the Drainage Department, whose duty it is to make house-to-house inspections and have defects remedied. The Health Department only inspects when complaints are made to the Health Officer by the occupiers or neighbours, or when the medical inspectors visit the house for inquiry into infectious diseases, and the cases are then reported to the Drainage Department, on which devolves the duty of taking the necessary action.

When the drainage system was first introduced, connections were allowed without any flushing arrangements. This defect has been remedied in many houses, but those latrines which remain are very liable to get choked and out of order. Subsequently filtered water taps were fixed on to the seats for flushing purposes. This was a most dangerous arrangement, which, when pointed out by the Health Department, was discontinued. In view also of the Health Officer's opinion that filtered water should not be used as a supply for latrines, unfiltered water with supply tanks for its storage and flush tanks have been adopted.

IV.—HOUSE DRAINS AND DOWN PIPES.

These are in charge of the House Drainage Department.

V.—SURFACE DRAINS.

Surface drains in the town are to be found in bustees, and between closely built houses and on the sides of lanes and roads, and they form the general drainage system of the suburbs. In bustees and narrow passages where there are unconnected latrines, under existing arrangements, a quantity of the urine and privy washings pass into the surface drains before reaching the gully-pit by which the surface drain is connected with the underground drains. As long as the surface drain is in good order, there is nothing particularly insanitary about this arrangement. It is far more preferable than a direct connection, which would inevitably get choked. It has the advantage of showing any defect at once and allows of it being readily dealt with.

In the morning many of these surface drains have foul matter in them, and in localities where overcrowding and overbuilding are greatest, the surface drains get fouled soon after they are cleansed; but the condition of the surface drains in the morning is repeated inside and outside of nearly every public urinal and latrine in the town. This state of things does not necessarily indicate so much the need of public latrines as the absence of sanitary police control. The absence of police sanitation would lead to similar practices in other towns. Practices of this kind can never be stopped by a few inspectors in the Health Department, whose outdoor work commences about 4 A.M., and is over by noon. Police sanitary regulations exist in other towns for the special purpose of preventing a similar condition of things, and until such are framed for Calcutta and enforced by the police authorities, matters in this respect will not improve, however many public latrines may be provided. The police are the recognised sanitary agents in all large towns for carrying out what is called "police sanitation," and it is necessary that a similar system should be introduced into Calcutta. The police authorities here give the Health Department every assistance when required. But more than this is necessary. Police sanitation must be recognised as a system necessary for the cleanliness of the town; special police sanitary regulations require to be framed, and the police empowered to enforce them.

VI.—ROAD SCAVENGING.

As shown in the Health Officer's note on the sanitation of Calcutta submitted with this report, there are many contributing factors not producing the neglect of road scavenging, but rendering it inefficient; they are inadequate supervision, inadequate establishment, the scraping of roads by the Engineering Department, and the removal of the mud by the Health Department; the system of throwing *domestic* refuse into the streets during the day, the increasing quantity of *trade refuse* thrown on the streets, the absence of police sanitation, the want of sweeping machines, the dependence on contractors for part of this work, and the blockage with consequent delay of the conservancy carts at the Circular Road dumping platforms. Each of these have been fully discussed by the Health Officer. With the causes explained the remedies are obvious.

VII.—COMPOUNDS AND COURTYARDS.

This is a matter of extreme difficulty in Calcutta. In western towns, the inside of houses, even among the poor, are kept clean and in good order, and are never visited by a sanitary inspector unless illness occurs in the house traceable or suspected to be due to some insanitary condition. It is only amongst the lowest orders, which form but a fraction of the population and where overcrowding exists, that filth and insanitary conditions prevail to any large extent, and for which a large special class of qualified sanitary inspectors are maintained. But in Calcutta, owing to the peculiarly migratory character of the people and their habits, which are not adapted to town life, with its bringing together of a large population, western conditions of town life are reversed, and it is only a fraction of the population that keeps the inside of their premises, and especially the courtyards or compounds, clean and in a sanitary condition. Under the conditions stated, to provide for the frequent inspection, cleansing and placing in a sanitary condition the insanitary premises of an eastern city such as Calcutta, means the maintenance of an immense staff of well-qualified sanitary inspectors. For the overcrowded localities of Burrabazar and Jorabagan and other quarters, even the appointment of such inspectors would not be effective unless a staff was granted such as the Health Officer, in September last, recommended the Commissioners to employ for the special cleansing of the inside of premises, and which has been steadily working in Jorabagan and Burrabazar since that time. This is due to the fact that in large tenemented houses and huts it is no one's business to keep the premises clean and notices to be followed by prosecutions if not complied with would be of little avail in securing the object for which the notice was served. The prosecution would take 2 or 3 months; in the meantime the filth would remain, and probably the fine would be so small as not to force the landlord to keep the premises clean. It was the knowledge of this that led the Health Officer to insist in the present emergency on a special cleansing staff. Notices are issued under sections 317 and 318, and if not complied with within 24 hours, the work is done and the landlord has to pay. One of the means, and probably the only effectual method of keeping the premises of these overcrowded tenement houses in anything approaching a sanitary state, would be the permanent appointment of such a special staff which should be maintained by the levying of a tax on those houses requiring cleansing. Possibly an arrangement of this kind would be the means of inducing landlords keeping in these houses a special individual to see to the cleanliness of the house. A great deal could, however, be done by having independent of the Overseers of cleansing a special Sanitary Inspector in each Ward, as was recommended in the Health Officer's first scheme in 1887.

VII.—WELLS IN COURTYARDS.

Formerly wells were filled up after service of notice under section 315, and much activity was shown in this direction, until a motion was brought forward by a Commissioner that no well should be filled up without analysis of the water, and should the water be found impure, the owner should be called upon to excavate and cleanse the well. The Health Officer wrote the following note to the Chairman on the subject :—

Opinion of the Health Officer on the subject of the motion of Babu Lall Behary Bysack.

This is a motion which should be strongly opposed, because it is calculated to retard sanitary work and do an immense deal of harm. All the wells in the town (town proper) are a source of ill-health and disease. There is not a well that I know of, the water of which is not injurious to health. There is no use of analysing these wells. All are impure and unfit for use. Numbers have at times been analysed in the laboratory, and have been found worse than the sewage taken from the sewer in some respects. No dewatering or cleansing would have the slightest effect, and it would be merely playing with the matter to call upon any owner to excavate and cleanse his well. I have had trial wells made all over the town, and the analysis of the new wells shows the water to be impure and unfit for use of any kind. Every well in Calcutta (town proper) should be filled up, and until this is done there will always be a great deal of cholera and other disease : there is no excuse now for a well in Calcutta (town proper), seeing that there is a public water-supply, which is intended to take the place of the old wells. This filling up of wells is a most important sanitary work, and should on no account be retarded in the slightest degree.

W. J. Simpson, M.D.,
Health Officer.

The General Committee, however, resolved that a month's notice under section 315 should be issued, and if any objections were raised that the water should be analysed. Objections are of course made to every notice served to fill up a well, and the effect of the resolution has been to practically stop the filling up of wells, as the laboratory staff is insufficient for carrying on this extra work ofanalysis of well waters.

IX.—COWSHEDS AND STABLES.

Excellent bye-laws have been framed by the Commissioners for the securing of sanitary cowsheds, and the only defect in them is that they do not apply to cowsheds which contain less than five cows. The bye-law makes every cow-house, cattle shed, and stable or building in which an animal is kept subject to section 335 of the Municipal Act, and it will be seen from the list of prosecutions—annexed in the appendix and marked C—for violation of that section, and which only refers to seven of the northern wards, that the Health Department has, so far as the bye-laws permit, made every endeavour to get the cowsheds of Calcutta improved. After a large number of notices had been served and further prosecutions were threatened, the Health Officer with one of the Ward Commissioners had a conference with a number of the *gowallas* in August last, and on their representing that the cubic space asked for each animal pressed on them as a hardship, he consented to recommend to the Commissioners a reduction from 800 to 600; and on their further representing that they had a difficulty in obtaining filtered water for their cowsheds, he also promised to bring this to the attention of the Commissioners. The Health Officer explained the bye-laws to the *gowallas*, and on their promising to improve their sheds ordered that all the threatened prosecutions should be cancelled. The result of the conference has been that a fair number of the *gowallas* have begun to put their cowsheds into order.

The wells in cowsheds have been allowed in many cases to remain, because there has been difficulty in supplying the cow-houses with a sufficient supply of filtered water. The question of a supply of filtered water to all cowsheds is now being considered by the Engineer and Commissioners, and immediately it is decided to grant every cow-keeper a proper supply of filtered water, the wells will be ordered to be filled up. There is scarcely an owner of a cowshed, bullock shed, or public stable in Calcutta who has not within the past five years been served with notices to improve his shed or to remove it, and numbers have complied with the notices; but the great majority have disregarded them and have been prosecuted under section 336, with the result that they are fined such small sums that it is cheaper for the owners to pay the fine periodically for keeping a cowshed without a license than to incur the expense of putting the cowshed, stable, or bullock shed in order. It is stated that among the *gowallas* there is a fund out of which prosecution fines are paid.

(1) Section 336 gives power after conviction to turn out the animals and close the shed, which seems a very effective remedy. The carrying out of such a measure, however soon, shows that it is unworkable. There is passive resistance by closure of doors. In one case an Inspector went with 80 men to turn out the animals and close a cowshed at 114, Shambazar Street, where 60 cows were kept. The door was kept closed, and no admission could be obtained, and the Inspector failed in his purpose. A complaint against the Inspector was immediately lodged with the Chairman through an attorney, that the Inspector had taken a gang of *lattials* and had trespassed on the premises of the cowshed, and that the proceedings were illegal.

On another occasion the owner of a cowshed in Ward C was convicted under section 336, and it was decided to close the shed. The Inspector was obstructed and his men ill-treated until the police interfered. This led to another prosecution, which, however, was withdrawn on the party giving an undertaking that the place would be no longer used as a cowshed. The promise, however, was never kept.

Even if resistance is overcome and the Inspector succeeds in turning out the animals, and the cowshed is closed, there is no penalty for re-opening the shed and replacing the animals which were turned out. This has occurred on many occasions, and the whole proceeding of service of notice and prosecution has to be commenced afresh.

One instance illustrates the others. Recently at 109, Russa Road, a buffalo shed, which was in a very filthy condition, was closed after prosecution, and the animals were turned out. The owner took charge of the animals and drove them away. Subsequently they were brought back and placed in the shed. Fresh prosecutions have now to be instituted. There is indeed nothing to prevent the owners taking charge of the animals immediately after they have been turned out and returning them to the shed after it has been closed and the Inspector has gone.

(2) Notices have also been served under section 387, requesting owners of cowsheds to improve the sheds or remove the animals. This section is misnamed "Summary," for there is nothing summary about the procedure. In default of compliance with notices prosecutions were instituted under sections 388 and 389, and small fines were inflicted. The only difference apparently in procedure was the insistence on medical evidence to prove that a nuisance existed.

(3) To improve cowsheds, notices under section 286 used to be served on owners of the land and on the shed owners. After the opinion on section 277, referred to in the Health Officer's note on the sanitation of Calcutta, and given by the Government Solicitor that the owner of the land is not responsible for draining and paving sheds or houses used for trade purposes when built and owned by those to whom he had let out the land, notices were no longer served on the owner of the land, but on the owner of the shed. Such notices are seldom complied with, and the Engineering Department do not like to incur the risk of doing the work with the probability of being unable to realise the cost, for there is nothing to prevent the *gowalla* removing his cows and shed before the completion of the work.

In regard to cattle sheds similar obstacles present themselves, with the additional one that, when any vigorous action is being taken in this direction, a strike is threatened. On 28th November 1894, when an impression was being made on the cattle shed owners, the Chairman issued an order not to prosecute in cases of cattle sheds, as he feared a strike.

(*b*) As already stated, places with less than five animals cannot be touched by the bye-laws, and the Building Committee are of the opinion that section 286 cannot be applied.

Applications are made for constructing huts for dwelling-places, and are sanctioned, and these huts are occasionally converted into cowsheds. There is no provision in the Act or bye-laws to prevent this.

The remedies consist in—

(1) selection of sites for *new* cowsheds as provided in section 335;
(2) Magistrates to inflict exemplary and daily continuous fines;
(3) the order for turning out the animals and closing the shed, and not to use it again as a shed for keeping animals, or to so alter it as to bring it into a sanitary condition satisfactory to the Commissioners, should be made by the Court; it would immediately become a police case if the orders of the Court were not carried out.

X.—HACKNEY CARRIAGE STANDS.

Most of the hackney carriage stands have at one time or other been recommended to be improved. On the 14th December 1895, the Health Department made the following recommendations relating to hackney carriage stands.

Grey Street, West End.

The stone-sets require to be relaid and levelled; it may also be extended a little towards the east. A urinal should be provided here for the use of the drivers, &c.

Cornwallis Street, opposite No. 120.

Should be paved with stone-sets and drained; also a urinal should be provided here.

Durmahatta Street at the Junction of Aheereetolla Street.

Should be paved and drained.

Cornwallis Square, N.-W. Corner.

The stone-sets should be relaid and levelled. Two gully-pits should be provided. The kerbstones at the south end should be replaced.

Musjidbari Street, West End.

The stone-sets should be relaid and levelled. The north entrance should be widened and damaged kerbstones should be replaced.

Upper Circular Road, opposite No. 120, at the Junction of Nawabdi Ostagur's Lane.

Should be paved with stone-sets and drained. A urinal should be placed also in this locality.

Upper Chitpur Road, Junction of Sikdarparrah Street.

Should be paved. A urinal if provided on the opposite side of the road will be of great use.

Canning Street, opposite Nos. 39 to 42.

Should be provided with gully-pits for drainage. A urinal also is required here.

Hooghly Bridge Approach.

Pavement should be repaired and relaid. Gully-pits should be provided for drainage.

Dalhousie Square, North.

Should be paved and drained.

The urinals were recommended because the Superintendent found that drivers and syces were in the habit of committing nuisances on the side drains, footpaths, &c. It was also suggested that a ground hydrant with unfiltered water should be provided near each stand, so that they might be thoroughly cleansed each morning.

The General Committee on having this list submitted to them requested that two stands be selected in each ward and estimates for paving be submitted. On 27th January 1896 the Health Officer submitted a list of 24 hackney stands, which should be paved and repaired. On the 18th September two of these were sanctioned.

XI.—CONDITION OF BUSTEES.

With regard to the more overcrowded bustees, and especially those with two-storeyed huts, the description is correct. Appended is a list marked D of bustees which have been recommended by the Health Officer to be improved, and the results. The bustee question is, however, essentially one intimately connected with the building regulations of the city, and they can only be successfully dealt with by a Building Act, which will apply not to any particular bustee, but to all the bustees within municipal limits. Much of the earlier work in opening up of bustees by cutting narrow lanes through them was costly and of doubtful utility. Since 1886 the Commissioners have gradually come round to the Health Officer's view, that structural improvements based on the construction of narrow lanes are not an advantage from a sanitary respect, and when roads are now made through bustees they are generally 16 or 24 feet wide.

As the two letters of the Medical Board, dated 30th November 1896 and the 9th December 1896, cover nearly the same ground, it is only necessary to refer here to two subjects which are mentioned in the first letter, and not in the second. One is the pollution of the subsoil; the other is the disposal of house refuse. There is one remark, however, in the letter which should not be allowed to pass unchallenged. It is that there has been a complete failure on the part of the Health Department to carry out the ordinary operations of town conservancy. With the Health Officer's note on the sanitation of Calcutta, and a better understanding of the magnitude of the operations which are carried out in this city under exceptional difficulties, I am sure that a very different opinion will be arrived at.

XII.—POLLUTION OF THE SUBSOIL.

The surface cleansing of the streets is not as efficient as it should be, and in some of the worst localities causes offensive smells, but that this, rather than the sewers, is answerable for the foul smells injurious to the public health, and so frequently complained of, is a misconception on the part of the Medical Board, and is not in accordance with the Health Officer's 10 years' Calcutta experience or investigations. If it were a fact, which it is not, there would be no need of spending 20 lakhs or more in remedying the defects in the existing drainage, which has been proved after a prolonged and thorough inquiry by sanitary experts to be in a dangerous condition. Moreover, the opinion of the Medical Board that several cases of tetanus which have occurred were traceable to persons falling and cutting themselves on soil impregnated with poisonous germs which has been caused by the condition of the streets is altogether unsupported by facts, and considering the general and wide distribution of the tetanus bacillus in all soils is a statement which could only be made under the most exceptional circumstances and after the most careful investigation. All soils are more or less impregnated with the tetanus bacillus, which is a widely distributed organism quite common in the superficial layers of the soil in temperature and especially tropical regions, and may be found also in most stables, and probably on the maidan, and certainly on the racecourse. Most cases of tetanus in Calcutta are among infants within a fortnight of their birth, and are due to cutting the navel cord with a spilt bamboo coupled with other native customs. The recommendation of the Board to sterilise the soil of Calcutta by watering all roads and lanes accessible to watering carts once a week with a solution of one part of perchloride of mercury to 5,000 parts of water would not effect the purpose for which it was intended, and does not commend itself to the Health Officer on account of its impracticability and danger. The roads and lanes accessible to carts form only a very small portion of the unoccupied surface area of Calcutta. The suggestion would necessitate the purchase of some 300 new watering carts. Corrosive sublimate is a deadly poison, and children may be seen any day rushing up to watering carts, catching the water in their hands, and drinking it. It is moreover most undesirable that ignorant coolies should have the handling on such a large scale of a dangerous poison. To these reasons may be added the fact that the roads and lanes of Calcutta are alkaline on account of the dung and the urine of animals. And it is a well-known fact that if corrosive sublimate in solution, not well mixed with hydrochloric acid and salt, is added to an alkali, or even to waters containing carbonates, that the corrosive sublimate decomposes, and the compounds which are formed are quite inert as germicides. Moreover, should the corrosive sublimate not be decomposed, the action of the sun dries the surface of the ground almost immediately; and it is a fact, not so well known, that corrosive sublimate is only a germicide when in solution, and that the powdered sublimate would be absolutely useless for sterilising the soil. On the contrary, as dust on the streets it would be dangerous. The recommendation therefore of the Medical Board that all roads and lanes accessible to water carts be watered once a week with a solution of one part of perchloride of mercury to 5,000 parts of water would do no good whatever, and is certainly what no experienced sanitarian would advise. Phenyle was recommended to be used in some of the worst lanes in the most crowded localities as a deodorant. It is a disinfectant used in nearly every native gentleman's house, and it was most effective in carrying out the object for which it was used.

XIII.—DISPOSAL OF HOUSE REFUSE.

Section 298, to which the Medical Board refers, gives power to provide dust-bins. There are 350 dust-bins in town and suburbs, and when suitable sites can be obtained others are added. Dust-bins are, however, as a rule nuisances, and cannot be placed on narrow streets, because they impede traffic, and because they are injurious to the health of the occupants of the houses immediately adjacent. In broad streets they cannot be put on the footpath, and

in bustees the landowners will not allow them, being of opinion that the placing of a dust-bin indicates possession by the Commissioners and interferes with his proprietary rights in the future. The above objections involve the acquiring by purchase of a suitable site for each dust-bin which the Commissioners wish to locate. There are certain caste prejudices against the dust-bin, even among servants, and there are many families too poor to keep servants, and the work of cleansing is done by the female members of the family who are *parda-nishins*, and who simply open the door, and not infrequently an upper-storeyed window, and throw the refuse into the street or lane. No one can be compelled to use a dust-bin unless it is within 50 yards of his premises. Thus if section 298 was enforced, every portion of Calcutta would become worse than Circular Road with its garbage platforms. In a city like Calcutta, with its large native migratory and heterogeneous population, whose ideas of sanitation are at the lowest level, the only practical method which suggests itself to the Health Officer is to permit the inhabitants to throw their refuse in the streets between 9 P.M. and 6 or 7 A.M., and after due warning to empower the police to arrest and prosecute any who throw refuse into the street at any other hour. The Health Officer has very frequently made a similar recommendation to the Commissioners. One of these, dated July 31st, 1889, is subjoined.

To CHAIRMAN,—I would beg to bring before the Chairman the desirability of regulating the throwing out of refuse on the streets of Calcutta. In my quarterly report, dated 18th October 1887, I drew attention to this matter, and there stated that unless such regulations are put in force, the conservancy carts might be travelling the streets and lanes the whole day, and yet not succeed in keeping them in a state of cleanliness. The present regulations are as follows:—

NOTICE.

DEPOSIT OF REFUSE ON PUBLIC STREETS.

The following hours have been fixed by the Commissioners, under section 300 of Act II (B.C.) of 1888, for the deposit of refuse on public streets:—

For Wards Nos. 1 to 11—between the hours of 12 P.M. to 8 A.M. and 12 A.M. to 2 P.M.

For Ward No. 12—between the hours of 12 P.M. to 9 A.M.

For Wards Nos. 13 to 17—between the hours of 12 P.M. to 5 A.M.

As these hours may be inconvenient, the following rules are framed to meet the convenience of occupiers who wish to avail themselves of them:—

(*a*) If persons will set up dust bins in their compound, the cart will remove refuse daily, entering the compound for that purpose, if necessary. Plans and designs of dust-bins can be obtained at the Municipal Office, or on receiving a request to that effect. The Inspector of the ward will attend at the house and explain the different kinds of dust-bins.

(*b*) The refuse may be kept in baskets of a convenient size inside the gate, and be placed on the cart when it goes its round. The approximate hour of the visit of the cart will be notified to each house wishing to dispose of its refuse in this manner. Baskets can be provided by the Inspector, if requested, at four annas apiece. If the baskets are placed close to the entrance, the municipal carter will empty them into the cart.

MUNICIPAL OFFICE,
Calcutta *1889.*

JOHN COWIE,
Secretary to the Corporation.

I WOULD state that, as regards Wards 1 to 11, there are no afternoon conservancy carts, and unless the Commissioners are prepared to give extra carts, coolies, peons, and a regular establishment, these rules are unworkable, and the refuse thrown out after 8 A.M. must remain in the streets the whole day. I would suggest that for these wards no refuse be thrown into the streets between 8 o'clock in the morning and 9 o'clock at night. In other tropical cities more stringent rules than these are in force; for example, in Rangoon no refuse is permitted to be thrown out on to the streets between the hours of 7 A.M. and 12 at night. The police are entrusted with the administration of this part of the Act in all towns I am acquainted with, and I think it should be a police law in Calcutta.

With regard to No. 12 Ward, the inhabitants should throw out their refuse during the same hours as Wards 13 to 17, *viz.*, between the hours of 12 P.M. to 5 A.M., allowing shopkeepers *only* to deposit *the sweepings of their shops* in baskets in the street until 9 A.M.

W. J. SIMPSON,

31-7-89. *Health Officer.*

Previous action of the Health Department on the specific instances of insanitary conditions recorded by the Sanitary Officers.

WITH reference to the specific instances given by the Sanitary Officers, I have had reports submitted to me by the Superintendents of Conservancy, and for information they are annexed as Exhibits X, Y, I. It will be seen from these reports that the examples given by the Sanitary Officers have with *very few* exceptions been all dealt with by the Health Department previous to the appointment of the Medical Board, and that had the Health Department's recommendations been carried out, these insanitary conditions would not have been found.

EXHIBIT A.

HEALTH OFFICER'S DEPARTMENT.

LOAN BUDGET FOR 1893-94.

Gowkhanas, Free Latrines, Discharging Depôts, Bathing Platforms, Urinals, and Burning Ghats.

ABSTRACT.

Item No.	Description.	Amount.			
1	2	3			
		Rs.	A.	P.	
1	Acquiring land at Ballygunge for extending and permanently establishing the Gowkhana ...	15,071	1	8	
2	Erecting three sheds at Ballygunge to accommodate 100 bulls at 800 cubic feet for each bull ...				
3	Erecting one shed to accommodate 10 sick cattle at Ballygunge	9,500	0	0	Lowest tender for 2 and 3 is Rs. 8,635-1-3.
4	Making up compound or yard at Ballygunge Gowkhana				
5	Erecting three bullock sheds at Entally to accommodate 100 animals at 800 cubic feet each ...				
6	Erecting a shed at Entally for 10 sick cattle ...	9,500	0	0	Lowest tender for 5 and 6 is Rs. 8,635-1-3.
7	Dismantling old buildings at Entally Gowkhana and repairing yard with old materials ...				
8	Replacing existing free latrine at Kalighat, by substituting Donaldson's patent	6,000	0	0	
9	Constructing a 10-seated Donaldson's patent latrine at Watgunge Bustee, in place of the existing free latrine	2,000	0	0	
10	Constructing a 10-seated latrine, Donaldson's patent, at Woolfut Bagan in place of the existing free latrine	2,000	0	0	
11	New discharge depôt, latrine, bathing platform, urinal, including boundary wall and new roads at Russa road, Bhawanipur	20,542	0	0	
12	Acquiring land at Bhawanipur for discharge depôt, &c.	15,000	0	0	
13	Discharging depôt and bathing platform at Circular Road	9,000	0	0	
14	Discharging depôt and bathing platform at Woolfut Bagan	10,000	0	0	
15	Acquiring land for depôt and bathing platform at Woolfut Bagan	10,000	0	0	
16	New urinals...	5,000	0	0	
17	Shahangar Burning Ghat accommodation for muharrirs and Sub-Registrars, &c.	11,342	0	0	
18	Filling up foul tanks, dobas and marshy lands ...	30,000	0	0	
19	Miscellaneous works, filling up wells, repairs to privies, building new privies, &c., in default of compliance with notices on owners	5,000	0	0	
20	Repairing roads to refuse and trenching grounds	1,500	0	0	
21	General discharging depôt at Watgunge bustee ...	.....			Engineer's estimate to follow.
	Total ...	1,61,455	1	8	

HEALTH OFFICER'S DEPARTMENT.

Loan Budget, 1893-94, Gowkhanas, Free Latrines, Discharging Depôts, Bathing Platforms, Urinals, and Burning Ghât.

1	2	3	4	5	6	7	8	9	10
Item number.	Description.	Estimated probable cost.				Expended to 31st March 1893.	Proposed by the Executive for 1893-94.	Sanctioned by the Commissioners, 1893-94.	Remarks.
		Sanctioned.	Date of sanction.	Not yet sanctioned.	Amount.				
		Rs. A. P.			Rs.	Rs. A. P.	Rs.	Rs.	
1	Acquiring land at Ballygunge for extending and permanently establishing the Gowkhana.	.....	.....	...	...	.....	15,071	...	Special reasons why acquiring and extending is recommended:—(1) This site from past working has proved to be a most desirable one. (2) It would be extremely difficult to obtain another site should we be called upon to vacate this land. (3) The present ground is much too small, and will have sooner or later to be extended, and there is now a suitable plot adjoining, the acquisition of which is included in this amount. (4) The late owner of the land now rented and the plot adjoining has recently died, and it is not improbable the sons will convert it into a building plot, it being so well situated, having roads on three sides; even should the adjoining plot only be built upon, we shall lose the present favourable opportunity of extending unless at the cost of acquiring buildings. (5) This land is well raised when compared with other suburban lands, and should we be compelled to leave, a large sum of money would have to be paid for raising sufficiently any land we might go to.
2	Erecting three sheds at Ballygunge to accommodate 100 bulls at 800 cubic feet for each bull.	.....	.....	...	...	.....	...	...	The existing structures are little better than useless from their dilapidated condition, and are far short of our requirements, the majority of our animals being left without shelter, exposed to all weathers day and night, which does them much harm. The proposed sheds will be substantially built on the revised standard plan for cow and bullock sheds, allowing 800 cubic feet to each bull, as required; bye-law 8, part III of sub-section (*l*), section 412, page 38 of bye-laws.
3	Erecting one shed to accommodate 10 sick cattle at Ballygunge.	.....	.....	...	...	.....	..	...	This shed would be divided off into parts for segregating any animals which perchance may be attacked with contagious or infectious diseases. At present we have no such shed, the necessity for which must, however, be obvious.
4	Making up compound or yard lat Ballygunge Gowkhana.	.....	.....	...	...	.....	...	...	This yard is at present in a very bad state, full of holes and ruts, and must in any case be repaired promptly.

Loan Budget, 1893-94, Gowkhanas, Free Latrines, Discharging Depôts, Bathing Platforms, Urinals, & Burning Ghat—concluded.

1	2	3	4	5	6	7	8	9	10
Item number.	Description.	Estimated probable cost.				Expended to 31st March 1893.	Proposed by the Executive for 1893-94.	Sanctioned by the Commissioners, 1893-94.	Remarks.
		Sanctioned.	Date of sanction.	Not yet sanctioned.	Amount.				
		Rs. A. P.			Rs.	Rs. A. P.	Rs.	Rs.	
	Total for Nos. 2, 3 and 4, inclusive ...	...	...	...	...	...	9,500	...	Lowest tender for 2 and 3 Rs. 8,635-1-3 put up.
5	Erecting 3 bullock sheds at Entally to accommodate 100 animals at 800 cubic feet each.	...	...	...	...	...	...	...	*See* remarks against No. 2.
6	Erecting one shed at Entally for sick cattle, 10 animals.	...	...	...	...	...	...	...	*See* remarks against No. 3.
7	Dismantling old buildings at Entally Gowkhana and repairing yard with old materials.	...	...	...	...	...	...	...	*See* remarks against No. 4.
	Total for Nos. 5, 6 and 7, inclusive ...	...	...	...	...	...	9,500	...	Lowest tender for 5 and 6 Rs. 8,635-1-3 put up.
8	Remodelling existing free latrine at Kalighat, substituting Donaldson's patent.	...	...	...	...	...	6,000	...	This latrine is most objectionably situated on the banks of Tolly's Nala, and is so faulty in construction that its washings with no small intermixture of night-soil run direct into the canal at the very spot where hundreds of persons bathe daily. During the rains the well which contains night-soil overflows into the canal; the state of affairs is insanitary. It is proposed to replace this objectionable structure by a 30-seated Donaldson's patent latrine further away from the Canal.
9	Constructing a 10-seated Donaldson's patent latrine at Watgunge Bustee, in place of the existing free latrine.	...	...	...	...	...	2,000	...	The existing latrine is a dilapidated old structure, and should be replaced by one of Donaldson's patent.
10	Constructing a 10-seated latrine, Donaldson's patent, at Woolfut Bagan, in place of the existing free latrine.	...	...	...	...	...	2,000	...	The existing structure is a veritable nuisance. It is largely used, and should be at once replaced by a 10-seated Donaldson's patent latrine.

11	New discharge depôt, latrine, bathing platforms, urinal, including boundary wall and new roads at Russa Road, Bhawanipur.	...	...	...	...	...	20,542	...	The urgent necessity for establishing night-soil discharging depôts in the suburbs has long been admitted on all sides, the only practicable difficulty hitherto being the selection of suitable sites. Such a site has been selected where it is proposed to erect a discharge depôt latrine, urinal, and bathing platform, with a boundary wall enclosing all, with new roads or approaches; the Engineer's estimates for which inclusive is Rs. 20,542. Apart from the discharge depôt, the need of a public latrine and urinal is obvious, and so also is that for a bathing platform, the waste water from which would be valuable for keeping the sewer flushed and clear.
12	Acquiring land at Bhawanipur for discharge depôt, &c.	...	...	...	...	...	15,009	...	This is an approximate estimate.
13	Discharging depôt and bathing platform at Circular Road.	...	...	...	...	...	9,000	...	This is according to Engineer's estimate. The land has already been acquired, 10th February 1890.
14	Discharging depôt and bathing platform at Woolfut Bagan.	...	...	...	...	...	10,000	...	This is approximate, based on the two preceding estimates. With this and the proposed depôts at Circular Road and Russa Road established, trenching night-soil from wards 19, 20, 21 and 22 will be reduced to a minimum, not discontinued altogether.
15	Acquiring land for depôt and bathing platform at Woolfut Bagan.	...	...	...	...	...	10,000	...	This may be roughly estimated at Rs. 10,000, but should the land acquired for *dhobeekhana* be not required for the purpose, an exchange might be effected for other more suitably situated. There is at present a discharging depôt at Woolfut Bagan, which has not been used for some years past owing to its objectionable position and faulty construction.
16	New urinals	5,000 0 0	Budget Committee, 1892-93	...	5,000	Nil	5,000	...	Urinals are very much needed in the suburbs, and the Commissioners realizing this fact recommended in Budget Committee of 1892-93 Rs. 5,000 for this purpose, but the sanction lapsed.
17	Shanngur Burning Ghat accommodation for muharrirs and Sub-Registrar's office, &c.	8,895 8 0	18-12-91	...	...	8,895 8 0	11,342	...	This is urgently necessary, and the Suburban Improvement Committee of 18th December 1891 sanctioned Rs. 8,895-8 of the estimated amount which lapsed. Sanction for the whole sum estimated for is now asked. The land was acquired on 31st March 1891.
18	Filling up foul tanks and dobas and marshy lands.	...	...	...	...	...	30,000	...	It is most desirable that a sum of money be provided in the Loan Budget for filling up foul tanks, dobas, and marshy lands for the suburbs *recoverable.*
19	Miscellaneous works, filling up wells, repairs to privies, building new privies, &c., in default of compliance with notices on owners.	...	...	...	...	...	5,000	...	It is very necessary to make provision for these odd jobs, which should certainly be done to bring about a more healthy and sanitary condition. *The amounts expended for Nos. 18 and 19 would be recoverable.*
20	Repairing roads to refuse and trenching grounds.	...	...	...	...	...	1,500	...	The road to refuse grounds and trenching grounds are in a very bad condition, and require frequent repairs. Several of our bulls have been badly hurt through this, and it is most necessary that a sum be set apart for keeping these roads in good order.
21	General discharging depôt at Watgunge bustee.	...	...	...	...	...	...	...	Engineer's estimate to follow.

(Sd.) W. J. SIMPSON.

EXHIBIT B.

OFFICE OF THE COMMISSIONERS OF CALCUTTA.

Section No. HEALTH OFFICER'S DEPARTMENT. Ward No.

Dated _____ *189* .

To

শ্রী .

তারিখ ১৮৯ ।

THIS is to inform you that the Health Officer has sanctioned the construction of a $\frac{\text{single}}{\text{double}}$ seated Donaldson's pattern oriental latrine No. at No. subject to the provisions of Act II of 1888, on the following conditions :—

এতদ্দ্বারা তোমাকে উপরোক্ত বাটীতে খৃঃ ১৮৮৮ ২ ধারার নিম্নলিখিত নিয়মানুসারে একটী এক বা দুই ফোঁকর ডোনালসন পেটেন্ট ৪নং পাইখানা প্রস্তুত করিবার অনুমতি দেওয়া হইল।

1. The upper portion of the privy should be properly enclosed according to plan.

১ম। নক্সা অনুসারে পাইখানার উপরাংশে চারিদিক রীতিমত আবৃত করিতে হইবে।

2. The roof of the privy shall be always separate from that of the house or hut.

২য়। পাইখানার চাল বসবাসের ঘরের চাল হইতে স্বতন্ত্র রাখিতে হইবে।

3. The privy must be made in accordance with the standard plan herewith.

৩য়। কমিসনারদিগের নক্সা অনুযায়ীক পাইখানা তৈয়ার করিতে হইবে।

4. No privy can be allowed within 50 feet of a tank, 20 feet of a well, and 6 feet of a street, public or otherwise, or a public drain.

৪র্থ। পুষ্করিণীর ৫০ ফুট পাতকোয়ার ২০ ফুট সরকারি বা অন্য কোন রাস্তার এবং সরকারি ড্রেন ৬ ফুটের ভিতর কোন পাইখানা তৈয়ার করিতে দেওয়া যাইবে না।

Boundary of the Site.

চৌহদ্দি মধ্যে।

North.—

উত্তর।—

East.—

পুর্ব্ব।—

South.—

দক্ষিণ।—

West.—

পশ্চিম।—

Further information, if required, can be had on application at the Health Officer's Department, where samples of Donaldson's pattern sanitary latrines have been erected for inspection. These latrines are to be obtained from

অন্য কোন বিষয় জানিতে হইলে ডাক্তার সাহেবের আপিসে দরখাস্ত করিলে জানিতে পারিবে যেখানে ডোনালসন পেটেন্ট পাইখানার নমুনা প্রদর্শনার্থ স্থাপিত হইয়াছে। এই সকল পাইখানা নিম্নলিখিত স্থানে পাওয়া যায়।

Superintendent.

সুপারিনটেনডেণ্ট।

EXHIBIT C.

Statement showing the notifications issued and signed by the Chairman under section 336 of Act II (B. C.) of 1888 for closing the cowsheds.

Serial No.	Locality of Shed.		Name of owner of shed.	Requirements of the notifications issued under secion 336 of Act II (B.C.) of 1888.	Result.
	No. of Premises.	Name of Street.			
1	2	3	4	5	6
1	16	Ram Kanto Bose's Street ...	Goopi Dari	It is hereby notified under section 336 of Act II (B.C.) of 1888, that the premises mentioned have been closed against the keeping of animals. Any person who contravenes this notification will be prosecuted.	Notifications cancelled—*vide* Memo. No. $\frac{16}{43}$ or $\frac{H\text{-}0}{3974}$, dated 5-4-93, the *goalahs* having protested through their attorney, Mr. Manuel.
2	16	Ditto ...	Surjimoni Bewa and Nibarun Ghose.		
3	54/1/H/3	Raja Rajbullub's Street ..	Purmeshwar Ghose ...		
4	54/1/H	Ditto ...	Nobo Dari		
5	114	Shambazar Street ...	Ditto		
6	114/1	Ditto ...	Nuffer Chunder Ghose ...		
7	54/3/H/1	Raja Rajbullub's Street ..	Gopi Nath Ghose ...		
8	155/H/60	Chitpur Road, Upper ...	Bhoot Nath Ghose ...		
9	155/H/6	Grey Street	Shama Bewa		
10	153	Shambazar Street ...	Behari		
11	153	Ditto ...	Shaik Auckloo		
12	161/H/23	Chitpur Road, Upper ...	Mohendra Das		
13	161/H/51	Ditto ...	Shaik Ashomuddy		
14	25	Raja Nobokissen's Street ...	Ram Subul Laha		
15	30/H	Doorga Churn Mukerjee's Street	Hurrochunder Ghose ...		
16	13	Ramkanto Bose's 1st Lane ...	Rughoo Nundun		
17	161/H/69	Chitpur Road, Upper ...	Nilloo Shome		
18	176/H/5	Ditto ...	Sriram Das		
19	176/H/7	Ditto ...	Gobinda Shaw		
20	58/H/4	Raja Rajbullub's Street ...	Premchand Ghose ...		
21	58/H/1	Ditto ...	Amullya Ghose ...		

U. R. MOOKERJEE,

Inspector, Ward I.

EXHIBIT C.

Statement showing the notices served in 1892-93 on the goalahs in Ward I to thoroughly improve and remodel their cowsheds, bullock sheds, &c., as required under the provisions of the Municipal laws and bye-laws before they could be licensed.

Serial No.	Locality of Shed.		Name of owner of shed.	Requirements of notice served under the provisions of the Act.	Takeed No.	Result.
	No. of Premises.	Name of Street.				
1	2	3	4	5	6	7
1	54	Raja Rajbullub's Street ...	Nilmoni Ghose	To thoroughly remodel, pave, drain and connect with the street sewer and supply with water, and otherwise put into sanitary condition, according to the bye-laws and rules framed by the Commissioners, the cowsheds to the satisfaction of the Commissioners.	1	Takeeds cancelled, as the Engineer objected to allow cowsheds to be connected with the street sewers that are less than 15 inches in diameter.
2	10/H/4	Ram Kanto Bose's 1st Lane ...	Makhun Ghose		2	
3	10/H/6	Ditto	Bihari Ghose		3	
4	10/H/5	Ditto	Narain Ghose		4	
5	10/H/0	Ditto	Kali Ghose		5	
6	10/H/0	Ditto	Nilmoni Ghose		6	
7	54/1/H/1/1	Raja Rajbullub's Street ...	Khetter Ghose		7	
8	54/1/H/3	Ditto	Parmeshwar Ghose		8	
9	54/1/H/	Ditto	Nobo Dari		9	
10	114	Shambazar Street	Nobo Dari		10	
11	114/1	Ditto	Nuffer Chunder Ghose (dead), now Nani Ghose.		11	
12	54/3/H/1	Raja Rajbullub's Street ...	Gopinath Ghose		12	
13	16/H	Ram Kanto Bose's Street ...	Bissonath Ghose		13	
14	16/H	Ditto	Nibarun Ghose		33	
15	16/H	Ditto	Goopi Dari		34	
16	8/H/2	Khetter Dhole's Lane... ...	Behari Lal Ghose		35	
17	155/H/54/1	Chitpur Road, Upper	Laul Ch. Ghose		36	
18	155/H/60	Ditto	Bhootnath Ghose		37	
19	155/H/61	Ditto	Laul Ch. Ghose		38	
20	155/H/53	Ditto	Bidoo Bariwalli		39	
21	155/H	Ditto	Kali Dassi		40	
22	113/H	Grey Street	Shoshi Ghose		41	
23	125/H/20	Shambazar Street	Umesh Ghose		42	
24	115/H/6	Grey Street	Shama Bariwalli		43	
25	10/H	Ram Kanto Bose's 1st Lane ...	Nuffer Chunder Ghose ...		44	
26	54/H	Raja Rajbullub's Street ...	Chinibash Ghose		45	
27	54/5	Ditto	Hutto Bakuly		46	
28	27	Ditto	Madhub Ghose		118	
29	27	Ditto	Bholanath Ghose		119	

30	58/H/4	Raja Rajbullub's Street ...	Premchand Ghose		120
31	58/H/28	Ditto	Shiboo Ghose		121
32	58/H/5	Ditto	Atul Ghose		122
33	58/H/1	Ditto	Amullya Ghose		123
34	58/H/7	Ditto	Nuffer Ghose		124
35	58/H/3	Ditto	Benode Ghose		125
36	55/H/6	Ditto	Troyluckho Ghose		126
37	55/H/0	Ditto	Panchoo Ghose		127
38	55/H/3	Ditto	Hem Ghose		128
39	55/H/2	Ditto	Soshi Bhusun Ghose ...		129
40	55/H/1	Ditto	Narain Ghose	To thoroughly remodel,	130
41	14	Ram Kanto Bose's 1st Lane ...	Khirode Ghose	pave, drain and connect	131
42	9/H/2	Ram Kanto Bose's Street ...	Mullick Ghose	with the street sewer and	132
43	9/H	Ditto	Nobo Ghose	supply with water, and	133
44	10	Ditto	Nuffer Ghose	otherwise put into sani-	134
45	0/H/1	Ram Kristo Bose's Street ...	Preo Ghose	tary condition, according	135
46	11/H/3	Ditto	Laul Chand Ghose	to the bye-laws and rules	136
47	11/H/4	Ditto	Hori Ghose	framed by the Commis-	137
48	13	Ditto	Meghnad Ghose	sioners, the cowsheds of	138
49	13/H/1	Ditto	Troyluckho Ghose	your premises to the satis-	139
50	16/H/9	Ditto	Surjimoni Bewa	faction of the Commis-	140
51	16/H/10	Ditto	Goopi Dari	sioners.	141
52	13/H/2/11	Ditto	Udoy Ghose		142
53	17/H/6	Raja Rajbullub's Street ...	Narain Ghose		143
54	17/H/1	Ditto	Issur Ghose		144
55	17/H/7	Ditto	Gopal Ghose		145
56	17/H/8	Ditto	Chinibash Pyne		146
57	10	Sita Kanto Banerji's Lane ...	Nundo Ghose		147
58	5/H/1	Beer Chand Gossain's Lane ..	Kalipodo Ghose		148
59	5/H/2	Ditto	Jodoo Ghose		149
60	5/H/3	Ditto	Hem Chunder Ghose ...		150
61	47/H/0	Shambazar Street	Gopi Ghose & Lukhimoni Bewa		151 & 152
62	47/H/0	Ditto	Kumaoni Bewa		153
63	25	Raja Nobokissen's Street ...	Khetter Mohun Dass ..		159
64	22/H/0	Bulloram Ghose's Street ...	Hem Chunder Neogy ...		160
65	27/	Ditto	Auckhoy Coomar Ghose ...		161
66	37/H/0	Raja Nobokissen's Street ...	Mukta Bewa		162
67	6/H/10	Kombuleatola Lane	Brojo Mitter		163
68	4/H/0	Kristoram Bose's Lane ...	Kader Ghose	Do. Do. bullock shed	164
69	161/H/5	Chitpur Road, Upper	Meajan Coachman		165
70	161/H/6	Ditto	Tincori Bewa		166
71	54/6/H/6	Raja Rajbullub's Street ...	Neamuth Khan		167
72	54/6/H/7	Ditto	Luckhi Bibee		168
73	161/H/44	Chitpur Road, Upper	Urmo Bibee		169

Statement showing the notices served in 1892-93 on the goalahs in Ward 1 to thoroughly improve and remodel their cowsheds, bullock sheds, &c., as required under the provision of the Municipal laws and bye-laws before they could be licensed.

Serial No.	Locality of Shed.		Name of owner of shed.	Requirements of notice served under the provision of the Act.	Takeed No.	Result.
	No. of Premises.	Name of Street.				
1	2	3	4	5	6	7
74	76/H/12/3	Shikdar Bagan Street ...	Brojo Ghose	To thoroughly remodel, pave, drain and connect with the street sewer and supply with water, and otherwise put into sanitary condition, according to the bye-laws and rules framed by the Commissioners, the cowsheds of your premises to the satisfaction of the Commissioners.	1289	
75	76/H/0	Grey Street .	Durga Churn Ghose ...		1290	
76	76/H/0	Ditto ...	Hori Manick		1291	
77	76/H/0	Ditto ..,	Nundalal Ghose		1292	
78	81/H/0	Ditto ...	Guru Churn Lahiri		1293	
79	66	Ram Kanto Bose's Street ...	Bykanto Ghose		1294	
80	76	Ditto ..	Madhub Ghose		1295	
81	74/H/12	Baugbazar Street ...	Hori Uria		1296	
82	119/H/3	Shambazar Street ...	Nependranath Bose ...		1297	
83	5/H	Kether Dhole's Lane ...	Kader Ghose		1298	
84	8/H	Ditto ...	Shiboo Ghose		1299	
85	119/H	Shambazar Street ...	Nani Ghose		1300	
86	81/H	Grey Street ...	Sewruttun Dhobi	Do. Do. bullock sheds	434	
87	155/H	Chitpur Road, Upper ...	Situl		435	
88	76/H	Baugbazar Street ...	Khoso Bibee		436	
89	76/H	Ditto ...	Jemadar Mullick		437	
90	76/H	Ditto ...	Shaik Nidoo		438	
91	76/H	Ditto ..	Jomir Sirdar		439	
92	76/H	Ditto ..,	Megnud Mullick		440	
93	76/H	Ditto ...	Toolook Sirdar		441	
94	114	Cornwallis Street ..,	Modhusudun Sadhkhan ...	Do. Do. stables ...	470	
95	155/H/13	Chitpur Road, Upper ...	Giribala Dabi		473	
96	47/H/19	Raja Nobokissen's Street ...	Mungur Coachman		474	
97	155/H/30	Chitpur Road, Upper ...	Durbasi		475	
98	78	Shambazar Street ...	Preonath Ghose		476	
99	161/H/4	Chitpur Road, Upper ...	Kangali Sadhkan		477	

N. R. MOOKERJEE,

Inspector, Ward I.

EXHIBIT C.

Statement re prosecution for continuing offence.

Locality.	Section of the Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	Number of animals kept.	Remarks.
1	2	3	4	5	6	7	8	9	10
			Fined Rs.		Fined Rs.				
1, Goalahpara Lane	336	13-3-96	30 0	4-12-96	50 0	.....	.....	12 cows and 4 buffaloes.	Repeatedly prosecuted and fined several times in several cases, which has not been shown here.
55, Raja Rajbullub's Street ...	336	12-5-96	6 0	15-12-96	8 0	.....	.....	10 cows.	
1, Baugbazar Street	336	Do.	6 0	Do.	F.S.*	.....	.....	8 cows and 4 buffaloes.	Party being absent.
114, Cornwallis Street	336	23-5-96	10 0	Do.	12 0	.....	.....	16 horses.	
161, Upper Chitpur Road ...	336	Do.	10 0	Do.	F.S.	.....	.....	6 ,,	Ditto.
78, Shambazar Street	336	Do.	10 0	Do.	Adjd. to 29-12-96	.....	.....	12 ,,	Party having denied charge.
37, Raja Nobokissen's Street ...	336	Do.	10 0	Do.	12 0	.....	.....	17 ,,	
47, Shambazar Street	335	22-6-96.	10 0	Do.	15 0	.....	.....	12 cows.	
47, Ditto	336	Do.	10 0	Do.	15 0	.....	.....	12 ,,	
76, Sikdarbagan Street ...	336	Do.	10 0	Do.	15 0	.....	.....	6 ,,	
58, Raja Rajbullub's Street ...	336	12-5-96	5 0	Do.	5 0	.....	.....	6 cows and 2 buffaloes.	
58, Ditto ...	336	Do.	5 0	Do.	5 0	.....	.....	10 cows.	
8, Ramkanto Bose's Street ...	336	18-8-96	8 0	Pending	.....	.....	.....	12 ,,	There were several repeated prosecutions in most of these and other cases which have not been included.
9, Ditto ...	336	Do.	8 0	Do.	.....	.....	.....	10 ,,	
66-1, Ditto ...	336	15-8-96	20 0	Do.	.....	.....	.....	50 ,,	
66, Ditto ...	336	Do.	20 0	Do.	.....	.....	.....	30 ,,	
76, Ditto ...	336	Do.	20 0	Do.	.....	.....	.....	25 ,,	
114-1, Shambazar Street ...	336	12-6-96	15 0	Do.	.....	.....	.....	50 ,,	
56, Khetter Dhole's Lane ...	336	Do.	15 0	Do.	.....	.....	.....	40 ,,	
55, Raja Rajbullub's Street ...	336	Do.	15 0	Do.	.....	.....	.....	35 ,,	

* Fresh summons.

T. R. MOOKERJEE,

Inspector, Ward No. 1.

Locality.	Section of the Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	Number of animals kept.	Remarks.
1	2	3	4	5	6	7	8	9	10
138H, Ahereetolah Street ...	307	25-6-96	5 0	4-7-96	Wd. & D.	.....	.....	30	
138, Ditto	307	do.	5 0	27-6-96	10 0	.....	.....	20	
76-1, Durmahatta Street	307	9-5-96	0 8	4-7-96	3 0	.....	.....	30	
15, Manick Bose's Ghat Street ...	307	4-7-96	5 0	11-7-96	F. S.	.....	.....	12	
24, Huro Chunder Mullick's Street	307	15-11-94	4 0	6-4-95	10 0	.....	.....	16	
153H, Ahereetolah Street		9-7-96	1 0	11-7-95	Warned	.....	.....	20	
112H, Bonomali Sirkar's Street ...	302	28-8-94	5 0	16-4-95	12 0	11-10-96	40 0	12	
9H, Sobhabazar Street	336	27-11-94	15 0	Do.	Struck off	.....	.....	10	
2H, Bonomali Sirkar's Street ...	336	27-11-95	2 0	Do.	F. S.	.....	.....	18	
277H, Upper Chitpur Road ...	336	Do.	1 0	Do.	Do.	.....	.....	11	
10-1, Baniatolah Street	336	23-7-95	8 0	30-8-95	10 0	9-11-95	10 0	9	
42H, Sobhabazar Street	336	8-6-95	4 0	12-8-95	10 0	Do.	10 0	25	
37H, Sunker Haldar's Lane ...	336	Do.	5 0	Do.	10 0	Do.	10 0	8	
37H, Bonomali Sirkar's Street ...	336	23-7-95	5 0	Do.	10 0	.....	.....	5	
38H, Ditto ...	336	Do.	5 0	29-8-95	7 0	.....	.....	3	
97H, Ahereetolah Street	336	Do.	10 0	19-8-95	10 0	19-10-95	20 0	25	
20H, Baniatolah Street	336	Do.	30 0	24-8-95	10 0	.....	.....	20	
18H, Ditto	336	Do.	F. S.	29-8-95	Wd. & D.	.....	.....	9	
1H, Mothoor Sen's Garden Lane ...	336	Do.	8 0	Do.	4 0	.....	.....	9	
8H, Mohamed Ramjan's Lane ...	336	29-8-95	3 0	28-1-96	16 0	.....	.....	5	
329, Upper Chitpur Road ...	336	18-6-96	10 0	4-8-96	10 0	28 11-96	10 0	Closed.	
78, Nimtolah Ghat Street ...	336	31-6-96	15 0	20-1-96	21 8	17-11-96	0 8	40	
14H, Mohamed Ramjan's Lane ...	336	Do.	15 0	Do.	20 0	Do.	F. S.	40	
332, Upper Chitpur Road ...	336	15-8-96	20 0	18-11-96	Struck off	.....	.....	8	
331, Ditto ...	336	Do.	20 0	Do.	4 0	.....	.....	8	
16H, Baniatolah Street	336	2-6-96	F. S.	4-8-96	15 0	31-10-96	20 0	8	
329, Upper Chitpur Road ...	336	20-8-96	Do.	27-10-96	2 0	.....	.....	Closed.	
329 & 330, Upper Chitpur Road ...	336	4-8-96	5 0	28-11-96	H Wd. & D.	.....	.....	16	
41H, Manick Bose's Ghat Street ...	336	20-8-96	5 0	10-8-96	F. S.	.....	.....	60	
40H, Do. do. ...	336	Do.	20 0	12-9-96	1 0	15-9-96	Struck off	60	
6H, Modun Mohun Dutt's Lane ...	336	Do.	Wd. & D.	31-10-96	50 0	.....	.....	30	
112H, Baniatolah Street	336	Do.	11 0	27-8-96	2 0	15-9-96	25 0	24	
112H Ditto	336	Do.	10 0	12-9-96	12 0	24-9-96	20 0	15	
20, Ditto	336	Do.	16 0	31-10-96	10 0	.....	.....	30	

G. B. HALDAR,

Inspector, Ward No. 2.

Locality.	Section of the Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	Number of animals kept.	Remarks.
1	2	3	4	5	6	7	8	9	10
			Fined Rs.		Fined Rs.				
3, Gooloo or Tagur's Lane ...	302	24-4-96	1 0	1-7-96	Struck off	.....	.....	.....	
179, Cornwallis street	302	1-7-96	1 0	26-8-96	1 0	.....	.....	.....	
5, Gowalapara Lane	307 & 336	2 & 3-6-96	40 0	26 & 27-7-96	Discharged	.....	.....	25 cows	
6, Ditto	307 & 336	Do.	40 0	Do.	1 0	.....	.....	20 „	
10, Ditto	307 & 336	Do.	40 0	Do.	1 0	.....	.....	20 „	
14, Ditto	307 & 336	Do.	40 0	Do.	Discharged	.....	.....	12 „	
15, Ditto	307 & 336	Do.	40 0	Do.	1 0	.....	.....	30 „	
								5 buffaloes	
28, Ditto	307 & 336	Do.	40 0	Do.	Discharged	.....	.....	33 cows	
								2 buffaloes	
15, Goabagan Street	307 & 336	Do.	40 0	Do.	Do.	.....	.....	20 cows	
15, Ditto	307 & 336	Do.	50 0	Do.	10 0	.....	.....	16 „	
14, Hogulkooria Gully	336	7-8-96	5 0	17-9-96	10 0	.....	.....	12 „	
								3 buffaloes	
44, Muszidbari Street	336	28-7-96	25 0	17-11-96	10 0	.....	.....	30 cows	
21, Durga Ch. Mitter's Street ...	336	6-8-96	10 0	26 11-96	Fresh summons	.....	.....	40 „	
107, Ditto ...	336	Do.	27 0	Do.	15 0	.....	.....	45 „	
91, Ditto ...	336	Do.	5 0	Do.	5 0	.....	.....	11 „	
91, Ditto ...	336	Do.	10 0	Do.	2 0	.....	.....	6 „	
19, Durga Ch. Mitter's Lane ...	336	Do.	11 0	Do.	5 0	.....	.....	11 „	
19, Ditto ...	336	Do.	4 0	Do.	2 0	.....	.....	4 „	
26, Ditto ...	336	Do.	5 0	Do.	Struck off	.....	.....	Removed	
26, Ditto ...	336	Do.	8 0	Do.	8 0	.....	.....	16 cows	
25, Ditto ...	336	Do.	7 0	Do.	8 0	.....	.....	16 „	
71, Beadon Street	336	Do.	8 0	Do.	Struck off	.....	.....	Removed	
67, Ditto	336	Do.	10 0	Do.	Do.	.....	.....	15 cows	
43-1, Kaliprosad Dutt's Street ...	336	Do.	25 0	Do.	15 0	.....	.....	65 „	
8, Momeyruddin Lane	336	Do.	5 0	Do.	2 0	.....	.....	5 „	
6, Ditto	336	Do.	6 0	Do.	3 0	.....	.....	9 „	
44, Muszidbari Street	336	8-8-96	2 0	28-11-96	5 0	.....	.....	14 „	
44, Ditto	336	Do.	2 0	Do.	2 0	.....	.....	5 „	
22, Ditto	336	Do.	2 0	Do.	5 0	.....	.....	14 „	
31, Durzipara Street	336	Do.	5 0	Do.	5 0	.....	.....	17 „	
26, Taruck Chatterjee's Lane ...	336	Do.	5 0	Do.	5 0	.....	.....	39 „	
15, Fakir Ch. Chuckerbutty's Lane ...	336	12-9-96	20 0	26-11-96	15 0	.....	.....	41 „	
32, Nilmoney Mitter's Street ...	336	5-5-96	50 0	Do.	25 0	.....	.....	56 „	
19, Ramchand Ghose's Lane ...	348	11-7-96	5 0	5-9-96	8 0	21-11-96	Fd. Rs. 10-0	.....	

F. DESANTO,

19th December 1896.

Inspector, Ward. No 3.

Statement re prosecution for continuing offence (Section 336, Act II, B.C. of 1888) in Ward No. 4 for two years.

Name of person prosecuted.	Locality.	Section of the Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	Date of 4th conviction.	Result.	Number of animals kept.
1	2	3	4	5	6	7	8	9	10	11	12
				Fined Rs.		Fined Rs.		Fined Rs.		Fined Rs.	
Chinibash Marrick & Bhollanath Marrick.	274, Upper Circular Road ...	336	25-1-95	Discharged	8-7-96	25 0	.....	.....	.....	.....	
Mohendra Ghose	294, ditto ...	336	Do.	12 0	17-7-95	10 0	4-12-95	10 0	3-7-96	20 0	
Gossaindass Pooli & Bholla Marrick	277, ditto ...	336	Do.	40 0	Do.	15 0	Do.	15 0	24-7-96	20 0	
			27-2-95	15 0	.....	.....	.....	.....	25-9-96	12 0	
Muntiram Ghosh	295, ditto ...	336	25-1-95	10 0	17-7-95	20 0	4-12-95	25 0	3-7-96	20 0	
Mon Mohini Bewah	295H, ditto ...	336	17-7-95	10 0	4-12-95	Warned.	.....	.....	.....	.....	
Ockhoy Hathee	101H-1, ditto ...	336	7-8-95	20 0	16-10-95	56 0	18-12-95	75 0	.....	.....	
Naiderchand Bakulee ...	Do., ditto ...	336	Do.	20 0	Do.	32 0	25-7-96	28 0	10-10-96	10 0	
Romoni Bewah	123H-52, ditto ...	336	7-1-96	1 0	.....	.....	.....	.....	.....	.....	
Saikh Mauzim	123H, ditto ...	336	8-12-96	2 0	.....	.....	.....	.....	.....	.....	
8 Names	93H, ditto ...	336	19-11-96	14 0	.....	.....	.....	.....	.....	.....	
Saikh Budhoo & Noorun Bewah ...	113H, ditto ...	336	12-3-95	2 0	12-12-95	Struck off	2-1-96	0 8	.....	.....	
Kalichurn Sen & Saikh Damru ...	93, ditto ...	336	22-8-95	2 0	2-1-96	0 8	8-12-96	2 0	.....	.....	
Saikh Asmuth	294-1, ditto ...	336	9-8-95	20 0	.....	.....	.....	.....	.....	.....	
Saikh Ibrahim	120H, ditto ...	336	16-1-96	2 0	.....	.....	.....	.....	.....	.....	
Gopee Hathee	28, Jageepara Lane ...	336	25-1-95	30 0	18-11-96	15 0	.....	.....	.....	.....	
Mohesh Hathee	31-1, ditto ...	336	8-11-95	15 0	30-6-96	20 0	.....	.....	.....	.....	
Mohesh Ghosh	30, ditto ...	336	8-11-96	Struck off	18-11-96	10 0	.....	.....	.....	.....	
Okhoy Hathee	32, ditto ...	336	3-8-96	50 0	.....	.....	.....	.....	.....	.....	
Fyzoo Mistree	258, Upper Circular Road ..	336	27-3-95	15 0	9-8-95	50 0	12-8-96	20 0	.....	.....	
Kunjabehary Paramanick ...	258-1-1H, ditto ...	336	27-11-96	90 0	.....	.....	.....	.....	.....	.....	
Hurry Ghosh	73H-2, Machua Bazar Street ...	336	6-6-95	1 0	20-8-95	2 0	18-1-96	5 0	.....	.....	
Hemchundra & Narainchundra Ghosh.	68H-13, ditto ...	336	22-6-95	2 0	15-2-96	Struck off	20-8-96	5 0	8-12-96	5 0	
Mukta Bewah & Gossain Poali ...	68H-12, ditto ...	336	Do.	8 0	8-12-96	5 0	.....	.....	.....	.....	
Satcoury Ghosh	68H-17, ditto ...	336	22-8-95	2 0	2-1-96	5 0	20-8-96	6 0	.....	.....	
Lukhymonee Bewah	104H-1, ditto ...	336	Do.	2 0	5-12-96	F. S.	Do.	4 0	.....	.....	
Amullyachurn Ghosh ...	68H-18, ditto ...	336	2-1-96	5 0	20-8-96	4 0	8-12-96	5 0	.....	.....	
Khettermohun Ghosh ...	96H, ditto ...	336	12-3-95	1 0	20-7-95	5 0	.....	.....	.....	.....	
Ramessur Dass & Nobinchunder Sircar.	112H, ditto ...	336	20-7-95	5 0	16-7-96	5 0	.....	.....	.....	.....	
Notobur Ghosh & Gopal Ghosh ...	61H-1, Sukea's Street ...	336	22-6-95	8 0	15-7-96	25 0	.....	.....	.....	.....	
Shosheebhushun Khara ...	29, ditto ...	336	20-7-95	10 0	24-1-96	15 0	28-7-96	10 0	.....	.....	
Mohindra Ghosh & Asutosh Roy	54H-22, ditto ...	336	7-1-96	4 0	21-5-96	4 0	3-9-96	20 0	8-12-96	4 0	
Bisto Ghosh & Audhorechunder Ghosh.	54H-79, ditto ...	336	Do.	2 0	Do.	10 0	21-7-96	10 0	.....	.....	
Jadoo Ghosh	54H-61, ditto ...	336	Do.	4 0	.....	.....	.....	.....	.....	.....	
Moheshury Bewah	54H-22, ditto ...	336	Do.	5 0	21-7-96	15 0	.....	.....	.....	.....	
Jadoo Ghosh	30, ditto ...	336	27-7-96	15 0	.....	.....	.....	.....	.....	.....	
Madhub Ghosh	54H-27, ditto ...	336	29-7-96	10 0	.....	.....	.....	.....	.....	.....	
Surjoo Ghosh & Troyluckho Ghosh	45H, Jhamapookur Lane ..	336	14-5-95	14 0	22-6-95	1 0	.....	.....	.....	.....	

Khushiram Ghosh & Bhootnath Ghosh.	11H-2, Fakirchand Mitter's Street	336	20-6-95	25 0	7-1-96	6 0	20-8-96	8 0	3-9-96	25 0	
Khetter Ghosh	18H-5, ditto ...	336	7-1-96	5 0	20-8-96	6 0	.....	.....	.....	...	
Rubeeram Ghosh	91H-1, Amherst Street ...	336	20-6-95	2 0	16-4-96	10 0	20-8-96	15 0	.....	...	
Kalichurn Ghosh	102H-9, ditto ...	336	8-6-95	Absent, F. S.	.....	.....	.....	.....	.....	...	
Harimohun Roy	70, ditto ...	336	12-12-95	Warned.	.....	.....	.....	.....	.....	...	
Kailashi Bewah	52H, ditto ...	336	20-8-96	4 0	.....	.....	.....	.....	.....	...	
Kalichurn Ghosh	102H-10, ditto ...	336	Do.	6 0	.....	.....	.....	.....	.....	...	
Fakir Ghosh & Hiramoni Bewah	61H, Bechoo Chatterjee's Street	336	22-6-95	8 0	7-12-95	10 0	29 & 27-7-96	20 0	.....	...	
Mohiny Bewah	35H, ditto ...	336	20-8-96	4 0	.....	.....	.....	.....	.....	...	
Ramessur Dass	82H, ditto ...	336	15-10-95	5 0	20-8-96	8 0	.....	.....	.....	...	
N. Bhattacharjee	80, ditto ...	336	2-1-96	Wd. & D.	.....	.....	.....	.....	.....	...	
Anondomonee Dassee ...	4H, Sunkur Ghose's Lane ...	336	22-6-95	5 0	.....	.....	.....	.....	.....	...	
Gobordhone Kowar	13H, Manicktollah Road ...	336	17-7-95	Struck off.	.....	.....	.....	.....	.....	...	
Nemyee Marrick	13H, ditto ...	336	Do.	10 6	11-12-95	25 0	3-7-96	Discharged.	.....	...	
Mutty Marrick	13H, ditto ...	336	Do.	20 0	Do.	40 0	.....	.....	.....	...	
Seetul Marrick	6H-1, ditto ...	336	24-1-96	25 0	.....	.....	.....	.....	.....	...	
Shoshichurn Shaw	71, Manicktollah Street ...	336	20-7-95	Discharged.	.....	.....	.....	.....	.....	...	
Umachurn Duty and Mohesh Duty	2, Ward's Institution Lane ...	336	17-7-95	40 0	20-11-95	20 0	30-6-96	50 0	.....	...	
Gobordhone Pan & Seetal Marrick	2, ditto ...	336	Do.	30 0	11-12-95	50 0	30-9-96	25 0	.....	...	
Jadob Dhoolay	1, ditto ...	336	Do.	35 0	20-11-95	30 0	12-6-96	30 0	.....	...	
Fakirchand Ghosh	2H, Hari Paul's Lane ...	336	22-6-95	4 0	18-1-96	8 0	21-7-96	15 0	.....	...	
Ramlall Roy	21, Shib Narayan Dass' Lane ...	336	Do.	5 6	.....	.....	.....	.....	.....	...	
Baddyanath Bakuly	24, Bahir Mirzapur Road ...	336	8-11-95	25 0	26-6-96	10 0	11-9-96	20 0	.....	...	
Heeroo Poalie	29, ditto ...	336	Do.	12 0	Do.	10 0	23-10-96	20 0	.....	...	
Russick Ghosh	28, ditto ...	336	26-2-96	10 0	10-7-96	25 0	.....	.....	.....	...	
Putitpabony Bewah	28H, ditto ...	336	24-1-96	20 0	.....	.....	.....	.....	.....	...	
Gopal Ghosh	28H, ditto ...	336	Do.	10 0	.....	.....	.....	.....	.....	...	
Sarodaprosad Mitter	19, Kali Dass Singhi's Lane ...	336	12-3-95	2 0	20-8-95	2 0	16-4-96	20 0	.....	...	
Mohendra Ghosh	29-7, Muddon Mitter's Lane ...	336	20-8-95	2 0	.....	.....	.....	.....	.....	...	
Mohun Khotta	16H, ditto ...	336	Do.	1 0	.....	.....	.....	.....	.....	...	
Saikh Nubeebuksh & Joymungle	2-2-H, Badur Bagan Lane ...	336	19-11-96	3 0	.....	.....	.....	.....	.....	...	
Hurrychurn Roy ... Koylashchunder Koondoo Gopalchunder Koondoo	12, Benode Behari Shaha's Lane	336	12-3-95	1 0	20-7-95	5 0	15-10-95	3 0	8-12-96	6 0	
Sadhoochurn Shaha	18H, ditto ...	336	Do.	2 0	do.	5 0	.....	.....	.....	...	
Kalichurn Sen	8, Brindabun Mullick's Lane ...	336	22-8-95	F.S.	2-1-96	0 8	.....	.....	.....	...	
Shaikh Jahoor	2H, Gas Street	336	27-11-95	15 0	.....	.....	.....	.....	.....	...	
Kubir Das & Muhammad Reza ...	2H, ditto	336	15-12-95	20 0	.....	.....	.....	.....	.....	...	

F. JACOB,

Inspector, Ward No. 4.

The 19th December 1896.

Locality.	Section of the Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	Number of animals kept.	Remarks.
1	2	3	4	5	6	7	8	9	10
9H, Kalakar Street	336	28-6-94	Fined Rs. 1 A. 0	28-8-94	Fined Rs. 2 A. 0	8-12-94	Struck off.	.....	
6I, Darmahata Street	336	23-8-94	„ 2 0	8-12-94	„ 2 0	.....	.....	.....	
16H, Jorabagan Street	336	Do.	„ 2 0	Do.	Struck off.	.....	.....	.....	
16H, ditto	336	Do.	„ 2 0	Do.	Fined 2 0	.....	.....	.....	
16H, ditto	336	Do.	„ 1 0	Do.	Struck off.	.....	.....	.....	
16H, ditto	336	Do.	„ 3 0	Do.	Fined 2 0	.....	.....	.....	
29H, Sikdarpara Street	336	24-7-94	„ 2 0	Do.	„ 1 0	.....	.....	.....	
29H, ditto	336	Do.	„ 3 0	Do.	„ 1 0	.....	.....	.....	
29H, ditto	336	Do.	„ 3 0	Do.	„ 1 0	.....	.....	.....	
10H, ditto	336	Do.	„ 5 0	Do.	„ 2 0	.....	.....	.....	
38, ditto	336	28-7-94	„ 3 0	Do.	„ 1 0	.....	.....	.....	
373, Chitpur Road	336	Do.	„ 3 0	Do.	„ 1 0	.....	.....	.....	
30H, Banstola Gully	336	Do.	„ 1 0	Do.	„ 1 0	.....	.....	.....	
16H-25, Jorabagan Street ...	336	Do.	„ 5 0	Do.	Fresh summons.	.....	.....	.....	
16, ditto	336	Do.	„ 1 0	Do.	Fined 1 0	.....	.....	.....	
52, Strand Road	336	Do.	„ 2 0	Do.	„ 2 0	.....	.....	.....	
52, ditto	336	Do.	„ 2 0	Do.	„ 1 0	.....	.....	.....	
52, ditto	336	Do.	„ 2 0	Do.	„ 1 0	.....	.....	.....	
52, ditto	336	Do.	„ 2 0	Do.	„ 1 0	.....	.....	.....	
14H, Nimtolla Ghat Street ...	336	23-8-94	„ 10 0	Do.	„ 5 0	.....	.....	.....	
16H, ditto ...	336	Do.	„ 10 0	Do.	„ 5 0	.....	.....	.....	
29H, Sikdarpara Street	336	24-7-94	„ 2 0	Do.	„ 1 0	2-5-95	Fd. 2 0	.....	
29H, ditto	336	Do.	„ 3 0	Do.	„ 1 0	Do.	„ 2 0	.....	
29H, ditto	336	Do.	„ 3 0	Do.	„ 1 0	Do.	„ 2 0	.....	
29H, ditto	336	29-8-95	„ 2 0	23-11-95	„ 5 0	.....	.....	.....	
29H, ditto	336	Do.	„ 2 0	Do.	„ 5 0	.....	.....	.....	
29H, ditto	336	Do.	„ 3 0	Do.	„ 5 0	.....	.....	.....	
24, Harolal Das' Lane	336	7-9-95	„ 5 0	7-12-95	„ 5 0	.....	.....	.....	
24, ditto	336	Do.	„ 2 0	Do.	„ 2 0	.....	.....	.....	
63, Pathuria Ghat Street ...	336	Do.	„ 3 0	Do.	„ 5 0	.....	.....	.....	
36, ditto ...	336	Do.	„ 0 8	Do.	„ 1 0	.....	.....	.....	
10H, Naranprosad Babu's Lane ...	336	Do.	„ 5 0	Do.	„ 10 0	.....	.....	.....	
10H, ditto ...	336	Do.	„ 4 0	Do.	„ 8 0	.....	.....	.....	
10-1, Sikdarpara Lane	336	Do.	„ 5 0	Lo.	„ 5 0	.....	.....	.....	
373, Chitpur Road	336	Do.	„ 2 0	Do.	„ 2 0	.....	.....	.....	
9, Akhoy Ch. Dutt's Lane ...	336	Do.	„ 2 0	Do.	„ 5 0	.....	.....	.....	
22, Darponaran Tagore's Street ...	336	Do.	„ 3 0	Do.	„ 7 0	.....	.....	.....	
22, ditto ...	336	Do.	„ 8 0	Do.	„ 15 0	.....	.....	.....	
20-3, Nimtolla Ghat Street ...	336	Do.	„ 0 8	Do.	„ 15 0	.....	.....	.....	
29, Sikdarpara Street	336	29-8-95	„ 2 0	23-11-95	„ 5 0	28-1-96	Fd. 5 0	.....	Fd. 10 0, 22-6-96.
29, ditto	336	Do.	„ 3 0	Do.	„ 5 0	Do	„ 5 0	.....	„ 10 0, do.
10-1, Sikdarpara Lane	336	28-1-96	„ 5 0	12-5-96	„ 8 0	22-6-96	Fresh summons.	.....	
386, Upper Chitpur Road	336	12-9-96	„ 5 0	21-11-96	Fresh summons.	.....	.....	.....	
29, Sikdarpara Street	336	29-1-96	„ 5 0	26-5-96	Fined 8 0	27-8-96	Fd. 2 0	.....	
29, ditto	336	Do.	„ 5 0	12-5-96	„ 6 0	Do.	„ 2 0	.....	
29, ditto	336	28-1-96	„ 5 0	24-7-96	„ 2 0	Do.	„ 2 0	.....	
29, ditto	336	29-1-96	„ 5 0	26-5-96	„ 5 0	Do.	„ 6 0	.....	Fresh summons, 26-11-96.
29, ditto	336	Do.	„ 5 0	12-5-96	„ 6 0	Do.	„ 2 0	.....	Ditto.
29, ditto	336	28-1-96	„ 5 0	24-7-96	„ 2 0	Do.	„ 2 0	.....	Ditto.

19th December 1896.

SCOTT,
Inspector, Ward No. 5.

Statement showing continuous prosecution of cowshed in Ward No. 6, Jorasanko.

Locality.	Section. of Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	Date of 4th conviction.	Result.	Remarks.
1	2	3	4	5	6	7	8	9	10	11
1895-96.			Rs. A.		Rs. A.		Rs. A.		Rs. A.	
Jadub Dholay, 2H, Chanebagan Lane	336	27-10-94 Hony. Magistrate	5 0	19-12-94 Hony. Magistrate	15 0	8-2-95 Chief Magistrate	100 0	12-7-95 Chief Magistrate.	354 0	Daily penalty of Rs. 3.
Mohesh Murich, 10-2, Radha Madhub Saha's Lane.	336	27-10-94 Hony. Magistrate	2 0	19-12-94 Hony. Magistrate	5 0	7-2-96 Chief Magistrate	100 0	10-8-95 Chief Magistrate.	100 0	
Goope Ghose, 2H, Manicktola Street...	336	14-2-95 Hony. Magistrate	4 0	11-7-95 Hony. Magistrate	3 0	28-1-95 N. D. Magistrate	10 0	.....	...	
Hurry Ghose, 2H, ditto ...	336	19-2-95 Hony. Magistrate	2 0	11-7-95 Hony. Magistrate	4 0	.....	...	.....	...	
Sam Manick, 2H, ditto ...	336	19-2-95 Hony. Magistrate	6 0	11-7-96 Hony. Magistrate	3 0	.....	...	.....	...	
Fokir Ghose, 56, Boloram Dey's Street	336	14-2-95 Hony. Magistrate	4 0	11-2-96 Hony. Magistrate	4 0	.....	...	.....	...	
Tuio Bilal, 11, Kristodas Pal's Lane ...	336	9-4-95	3 0	28-1-96 N. D. Magistrate	18 0	.....	...	.....	...	
Bane Dare, 1H, Bysak Bagan Lane ...	336	10-1-96 N. D. Magistrate	5 0	17-2-96 N. D. Magistrate	5 0	.....	...	.....	...	
Kedar Ghose, 1H, ditto ...	336	27-10-94	2 0	19-12-95	5 0	11-7-95	4 0	.....	...	
Soigoalla, 29, Boloram Dey's Street ...	336	9-4-95	3 0	10-8-95	5 0	.....	...	.....	...	
Gosto Ghose, 2H, Manicktola Street ...	336	9-2-95	1 0	11-7-95	3 0	.....	...	.....	...	
Sosne Bewa, 2H, ditto ...	336	23-2-95	4 0	Do	3 0	.....	...	.....	...	
Bhobo Bewa, 6H, Assootosh Dey's Lane	336	2-3-95	4 0	9-7-95	2 0	.....	...	.....	...	
Sam Mone Bewa, 6-2, Rambagan ...	336	10-11-94	2 0	29-8-95 N. D. Magistrate	10 0	28-1-96 N. D. Magistrate	15 0	.....	...	
Moto Bakuolee, 39H, Manicktola Street.	336	19-2-95	6 0	9-9-95 N. D. Magistrate	10 0	.....	...	.....	...	
Kedar Ghose, 6H, Assootosh Dey's Lane.	336	2-3-95	8 0	9-7-95	10 0	.....	...	.....	...	
Dino Ghose, 2H, Manicktola Street ...	336	19-2-95	1 0	Do.	4 0	.....	...	.....	...	
Rhodey Murick, 39, ditto ...	336	Do.	5 0	Do.	10 0	.....	...	.....	...	
Nobin Murick, 72, Mooktaram Baboo's Street.	336	23-7-95	2 0	19-11-95 N. D. Magistrate	15 0	.....	...	.....	...	
Sagour Ghose, 8-1, Rambagan Lane ...	336	2-12-95	10 0	19-2-96 N. D. Magistrate	10 0	.....	...	.....	...	
Buma Bewa, 1H, ditto ...	336	23-12-95	4 0	28-1-96 N. D. Magistrate	10 0	.....	...	.....	...	
Bostom Matoo, 84, Mooktaram Baboo's Street.	336	11-11-95 N. D. Magistrate	15 0	26-2-96 N. D. Magistrate	15 0	.....	...	.....	...	
Panchoo Ghose, 51, Boloram Dey's Street.	336	19-2-95	1 0	11-3-96 N. D. Magistrate	10 0	.....	...	.....	...	

Locality.	Section of Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	Date of 4th conviction.	Result.	Remarks.
1	2	3	4	5	6	7	8	9	10	11
1896-97.			Rs. A.		Rs. A.		Rs. A.		Rs. A.	
Rusick Mutay, 1H, Basack Bagan Lane	336 & 307	8-6-96 N. D. Magistrate	15 0	11-8-96 Hony. Magistrate	10 0	8-12-96 Hony. Magistrate	10 0			
Preo Kolay, 5H, Bysack Bagan Lane	336 & 307	8-6-96 N. D. Magistrate	15 0	11-8-96 Hony. Magistrate	10 0	8-12-96 Hony. Magistrate	10 0			
Sam Marick, 2H, Manicktola Street ...	336 & 307	8-6-96 N. D. Magistrate	15 0	11-8-96 Hony. Magistrate	10 0	8-12-96 Hony. Magistrate	15 0	.....	...	On 8-12-96 the Honorary Magistrate refused to grant daily penalty.
Golaul Marick, 1H, Bysack Bagan Lane	336 & 307	8-6-96 N. D. Magistrate	15 0	11-8-96 Hony. Magistrate	25 0	8-12-96 Hony. Magistrate	20 0			
Jodoo Ghose, 40, Ramtonoo Bose's Lane	336 & 307	8-6-96 N. D. Magistrate	15 0	11-8-96 Hony. Magistrate	10 0	8-12-96 Hony. Magistrate	15 0			
Chinebash Ghose, 48H, Ramtonoo Bose's Lane.	336	20-8-96 Hony. Magistrate	25 0	8-12-96 Hony. Magistrate	25 0	.....	...	.....	...	
Bane Ghose, 56H, Mooktaram Baboo's Street.	336 & 307	2-7-96 N. D. Magistrate	25 0	.....	.....	.....	...	.....	...	Case for continuing the offence filed in North Division Magistrate's Court on 4-8-96; 21-8-96 fixed for hearing; warrant issued for arrest for non-attendance; surrendered on 4-9-96 and informed the Court that cows will be removed and cowshed will be closed; adjourned to 9-9-96; did not appear; warrant for arrest again issued; cowshed closed, 15-12-96 and shed sold.

N. P. SANDEL,
Inspector, Ward No. 6.

COWSHEDS.

Statement re-prosecutions for continuing the offence.

Locality.	Section of the Act.	Date of 1st conviction.	Result.	Date of 2nd conviction.	Result.	Date of 3rd conviction.	Result.	No. of animals kept.	Remarks.
1	2	3	4	5	6	7	8	9	10
65H, Cross Street	336	11-4-95	F. S.						
61-1H-3, ditto	336	Do.	4 0						
64H-5, ditto	336	Do.	6 0						
51H-21, ditto	336	9-4-95	4 0						

H. P. WILSON,
Inspector, Ward No. 7.

EXHIBIT D.

Report of the Bustee Clerk on the bustees recommended by Health Officer to be improved, with their dates and the action taken on them.

Name of Bustee.	Date of recommendation by H. O. to be improved.	Under Section	Date when condemned by Commissioners.	Date of inspection by Medical Officer.	Date of final consideration by Bustee Committee.	Final orders passed by the Commissioners in meeting.	Remarks.
1	2	3	4	5	6	7	8
Radha Mullick's Bagan	30-1-88	280 (Old Act)	2-8-95 (B. C.)	.....	.....	.....	Proof copy of report sent to Dr. Cobb for approval. (*a*) Taken up *de novo*.
Koomedan Bagan	27-1-88	Do.	24-3-88	27-5-88	30-1-91	Passed	In these blocks improvements are nearly completed, 4th block action taken *de novo*.
Narkel Bagan	31-1-89	257	13-5-89	24-6-89	25-8-90	Do.	3 roads completed—others pending.
West of Leper Asylum	Do.	Do.	8-6-90	6-7-91	.....	.....	Consideration of improvements in abeyance.
Kaloo Ghose's Bagan	5-9-89	Do.	8-1-91	Do.	.....	.....	Ditto ditto.
Shampukur	27-9-90	Do.	Do.	31-3-91	.....	.....	Final orders passed—File with Ward Commissioners. Action in abeyance.
Dixon's Lane	23-12-90	Do.	4-6-91	11-10-91	.....	.....	Consideration of improvements in abeyance.
Nimtola	Do.	Do.	2-7-91	24-9-91	24-1-95	Passed	Steps are being taken to commence work.
Burtola	2-9-90	Do.	8-1-91	31-1-91	13-12-95	27-2-96	Ditto ditto.
Sundriaputty	24-3-90	Do.	12-6-90	11-10-90	.....	.....	Kept in abeyance for opening of Harrison Road.
Machoa Bazar Khalasytola	24-2-90	Do.	Do.	21-8-90	13-12-95	27-2-96	Steps are being taken to take up works.
Nebutola Ooryapara Lane	23-12-90	Do.	21-4-91 (B. C.)	11-10-91	17-2-96	9-4-96	Further objections are being considered.
Nilmoney Mitter's Lane	1-4-91	Do.	4-6-91	26-9-91	.....	.....	Consideration of improvements in abeyance.
Sham Bazar Moochapara	21-4-91	Do.	Do.	6-7-92	1-11-95	2-1-96	Further objections are being considered.
Kidderpore Goalapara	1-8-91	Do.	19-12-93	15-10-94	19-6-95	9-12-95	Steps are being taken to take up works.
Bibee Bagan	31-10-92	Do.	Do.	.....	.....	.....	Engineer has been requested to prepare a plan of the bustee.
Set Bagan	29-3-92	Do.	1-11-95	.....	.....	.....	Report sent to Dr. Crombie (in England) for his signature.
51, Kally Pershad Dutt's Street ...	5-9-92	Do.	19-12-93	.....	.....	.....	Kept in abeyance under orders of Chairman, there being no funds.
Napit Bagan	19-12-93	Do.	.....	.....	.....	.....	}
391, Upper Chitpur Road	27-2-93	Do.	.....	.....	.....	.....	}
Gorastan	16-2-93	Do.	.....	.....	.....	.....	} Kept in abeyance for want of funds, as directed by the Chairman.
Imambag Lane, Nos. 31, 34 and 39 ...	27-2-93	Do.	.....	.....	.....	.....	}
Between Currie's Church Lane and Machoa Bazar Road.	19-2-93	Do.	.....	.....	.....	.....	}
244, Upper Circular Road	24-8-95	Do.	.....	.....	.....	.....	Included with Bahir Simla bustee. Engineer has been requested to prepare plan.
Smith's Lane	15-8-95	Do.	.....	.....	.....	.....	27-2-46. Engineer has been requested to prepare plan.
Manick Bose's Ghat Street	5-5-96	Do.	.....	.....	.....	.....	October 1896. Plan sent to Medical Officers for report under section 257.
154, Baranassy Ghose's Street	16-6-96	Do.	.....	.....	.....	.....	B. C. 19-12-96. Proceedings Bustee Committee remain to be confirmed first.
Nawab's Lane	Do.	Do.	.....	.....	.....	.....	B. C. 18-7-96. Plan is being prepared.

1. On 15-9-93 Chairman's order was "These bustee projects must remain in abeyance for want of funds."
2. The bustee projects are placed before the Bustee Committee several times to dispose of objections from owners.

G. DEY,

Bustee Clerk.

The 12th January 1897.

EXHIBIT E.

REPORT BY SUPERINTENDENT, NORTH DIVISION, ON THE SPECIFIC INSTANCES MENTIONED IN THE SANITARY OFFICER'S REPORT AND THE ACTION WITH DATES TAKEN BY THE HEALTH DEPARTMENT ON THEM PREVIOUS TO THE SANITARY OFFICER'S INSPECTION.

Overcrowding of huts at 81, Grey Street, and in Russick Lall Ghose's Lane.—Section 320 provides against overcrowding of buildings, but not of huts. Then there is also difficulty as to what would constitute overcrowding, the Act having not defined the same. This was brought to the notice of the Chairman by a letter from the Municipal Pleader when the Health Officer wanted to institute prosecution in one case. The matter was placed before the Bye-laws Committee in 1893, and has not yet been settled. There is also difficulty in ascertaining the extent of overcrowding. The municipal officers cannot enter an occupied house without giving 24 hours' notice except with the consent of the occupier; and they can make no inspection at night, which is the only suitable time to ascertain the number of inmates of a house. When the Health Officer inspected the huts on 23rd December 1896, he did not find overcrowding

17, Durponarain Tagore Street.—The Chairman approved the plans for improvement of this bustee in 1886. Only a 6 feet road was made on the east, but other improvements suggested were not carried out.

93, Upper Circular Road (Latrine).—The Health Officer first drew attention to the bad condition of this latrine and adjoining N. S. Depôt on 15th June 1893. Since then it has been reported from time to time, and during the current year on 18th May 1896, 28th July 1896, and again on 17th November 1896.

46, Mondol Street.—No such premises in Mondol Street. Perhaps 47, Durmahatta Street is meant. In this case the House Drainage Department was requested to get the privy connected with the sewer on 12th February 1896, *vide* column 58, file 83. (In Mondol Street, 44 is the last number.)

228, Mondol Street.—No such premises in Mondol Street. It may have been intended for 228, 228-1, or 229-1, Durmahatta Street.

Re No. 228.—Notice served on 25th August 1896, party prosecuted, and privy demolished on 17th September 1896.

Re No. 228-1.—Notice served for improvement, and the owner failing to carry out the same, the takeed made over to Engineer's Department on 3rd August 1895, to execute the work in default.

Re No. 229-1.—Similar to above, the takeed having been sent on 12th August 1895, to Engineer's Department to execute the work in default.

162, Aheeritolla Street.—In this case I find that no action has been taken by this department.

39-3, Burtolla Street.—The passage and drain are paved and cement plastered. Objection was raised to the sanction of the adjoining building at No. 40. Had the bye-laws been enforced, this narrow lane would have been improved by having another two feet width added to it. But the case is still pending before the Buildings Committee, which appointed a sub-committee in 1894 to report on this case. The report, however, has not yet been made.

169, Manicktolla Street.—No defect in the body spouts of this house. The inspector of the ward informs me that he was with the Deputy Sanitary Commissioners when the inspection was made, and that the body spouts of the adjoining houses Nos. 168 and 167 are meant. In these cases warning notices Nos. 84 and 85 were served on the 12th May 1896, and the House Drainage Department was requested to get the work done.

70, Baniatolla Street.—The drain is in a respectable house. It is clean new. It is the duty of the occupier to keep it clean, and he has got a sweeper of his own to sweep and clean the drains and the compound.

50, Boloram Mozoomdar's Street.—Notice No. 662 served on the party on the 26th November 1895 to improve the privy and the drains. The party has taken the work in hand, but the progress is slow, as Health Officer has himself seen.

33, Mooktaram Babco's Street.—Temporary obstruction by leaves, &c., on the grating. The obstruction was removed by the party's own servant immediately after the inspection by the Deputy Sanitary Commissioners. In fact, the man was attending to the drains when, on seeing the Sanitary Commissioners, he stood at a respectable distance and stopped his work. Further, whether connections are trapped or not cannot be ascertained from outside inspection. It is the duty of the house drainage inspectors to see to these defects, and not to allow them to exist. I do not think that the Sanitary Commissioners took the trouble of getting the road surface dug up to see whether the connection was trapped or not. *The connection, when opened up and examined, was found to be trapped;* only the grating over the yard gully was broken, and the same has since been replaced.

73, Grey Street, 156, Upper Circular Road, 13, Rajendra Nath Sen's Lane, and 66, Sukea's Street.—Surface drains are all along allowed to carry urine and privy washings; they are preferable in bustees having scanty water-supply, on the ground that they can be kept more clean than underground sewers, which, if provided in bustees, would get choked up in no time.

For the repair of the drains in bustee No. 73, Grey Street, notices Nos. 80 and 171 were served on 15th September 1894, and 28th September 1894, and takeeds sent to Engineer to execute the works in default. Similarly, for bustee No. 156, Upper Circular Road, notices Nos. 81 and 389 were served on 15th September 1894, and 20th December 1894, and takeeds sent to Engineer's Department for executing the works in default.

Jorabagan Bustee.—I think the bustee on the north side of Jorabagan Street and between it and Nimtolla Ghaut Street is the one meant. This is called Nimtolla Bustee. Its improvement was suggested long ago. In fact, the improvements have already been started. The Health Officer has seen that a road is already under construction. The huts in its line have been removed and the sewer is being laid. The Health Officer recommended the improvements on 23rd December 1890.

21 & 22, Durmahatta Street, is practically a bustee, with two pucka buildings amongst the clusters of huts. One of these buildings is under repair, hence a large quantity of debris has to be removed every day; so there is no wonder if 10 cartloads were seen on one day, as 10 to 15 cartloads are daily removed from this place. The Health Officer has himself seen 5 cartloads being removed one morning.

45 & 46, Burtolla Street.—This is in Jorabagan, and has been dealt with by the special cleansing staff appointed on 26th September. Notices served on 29th October 1896. Buildings cleansed out and defects in the drains and body spouts remedied. The whole of the narrow passage has been paved and cement plastered.

67, Ramkanto Bose's Street is a large dwelling-house occupied by the family of a late barrister-at-law. There is no cowshed in the premises. Perhaps the one at No. 66-1 is meant. Regarding this shed action has already been taken under sections 336 and 307 with following results:—

					Rs.
On 11th April	1895	the party was fined	...	...	20
On 27th August	1895	ditto	...	...	25
On 23rd November	1895	ditto	...	...	25
On 28th November	1895	ditto	...	...	30
On 15th August	1896	ditto	...	...	20

On 12th December 1896 the party was warned simply, and another case instituted on 22nd December 1896 is pending.

10, Ramkanto Bose's Street is also a dwelling-house, and perhaps the cowshed at No. 9-1, Ramkanto Bose's Street, is the one referred to. In this case also action has already been taken under section 336 with following results:—

					Rs.
On 23rd November	1895	fined	...	...	20
On 28th November	1896	do.	...	...	30

Another case is pending.

It is not possible to trace out what cowsheds are referred to, as there are so many of them in Raja Bagan. Regarding the closing of cowsheds, I pointed out the difficulties on 9th August 1895, and suggested the service of notices under section 387, and then prosecuting under sections 388 and 389. The Chairman approved of this suggestion and directed the prosecuting officers to press for heavy fines; *vide* his orders dated 21st August 1895. We served some 250 notices in the North Division between 31st May 1895 and 8th April 1896. But in most cases we could not prosecute, as the medical evidence wanted by Court could not be produced in all cases. It had not been anticipated that such evidence would be required. In those cases that were placed before the Court with the medical evidence no order to close the sheds were issued. The parties were simply fined.

83, Grey Street.—The drain referred to is of the bustee No. 81, Grey Street. The temporary obstruction was due to the collection of materials by the Drainage Department for improving the public latrine and night-soil depôt at 83, Grey Street. The improvements were suggested by the Health Officer long ago, prior to the year 1889.

Stables in Armenian Street.—Notice No. 765 served on 27th March 1895, and takeed sent to Engineer Department for executing the work in default on 15th May 1896. Also notices Nos. 340 and 341 served on 11th June 1896 and 27th June 1896 for the improvement of these stables. The stables are used partly for keeping private animals, partly for hackney carriage ponies, and partly for cart bullocks. There is a well, but with a parapet wall all round within the compound. On 24th March 1890 the Health Officer suggested a road through these stables.

Tank at No. 73, Grey Street, was dewatered and cleansed out in January 1895. Under the Health Officer's order notices are being issued to stop washing of grains in tank water.

Side drains of public roads are in charge of the Engineer's Department, which constructs and maintains them. On 21st July 1895 the Health Officer drew the attention of the Engineer's Department to the defects in such drains in Lal Bagan bustee (161, Upper Chitpur Road), and suggested their being replaced by kerb and channel stones. The attention of the Engineer's Department was drawn to the bad condition of such drains in Ramdhone Khan's Lane on 29th April 1896.

Bad condition of such drains around and near Marcus Square was brought to the notice of the Engineer's Department on 1st May 1896.

Bad condition of such drains in Hari Pal's Lane was brought to the notice of the Engineer's Department on 14th May 1896.

Bad condition of such drains in Radha Bazar Street and Old China Bazar Street was brought to the notice of the Engineer Department on 3rd June 1896.

Bad condition of such drains in Bhoobun Mohun Sircar's Lane was brought to the notice of the Engineer's Department on the 8th June 1896. Similarly, whenever such defects are noticed by this department, the attention of the Engineer's Department is drawn to them.

8-1-97. M. GHOSE.

EXHIBIT F.

REPORT ON THE SPECIAL DEFECTS IN SOUTHERN DIVISION REPORTED BY SANITARY OFFICERS AND THE MEASURES TAKEN ON THESE PREVIOUS TO THE REPORTS.

1. *Overcrowding Houses.*—No definite address is given. Speaking generally, section 320 does not clearly define what might be considered overcrowding. To take action on this section would necessitate house-to-house inspection by night, which is not permitted by the Act, and a separate establishment of inspection employed for the purpose. This section of the Act is therefore defective. Section 393 gives power to inspect houses during the day only after 24 hours' notice.

2. Re *11, Hullodhur Budden's Lane.*—In this case the body spout is connected with the sewer by means of yard gully, and was temporarily choked, causing the water to overflow the lane at the time when inspected by the Sanitary Officer of the Medical Board. The obstruction was removed in his presence. No action was necessary.

3. Re *43, Ooriapara Lane.*—This is an old existing privy, and the washings flow into the surface drain attached to the privy in connection with the house drain connected with the sewer. The privy is in good order.

4. Re *Goongapara Lane* (*i.e., Goomghur Lane*).—In this case no definite address is given. The privies in this locality are of long standing, and the surface drains provide for carrying off the washings connected with sewer by means of yard gullies. The drains are daily attended to.

5. Re *Urinals in Chandney-Bazar* (*over Surface Drains*).—In this case, on 4th and 27th November 1894 the bazar was inspected, and at the request of the Health Department the Secretary wrote letters bearing Nos. 4308 to 4316 on 22nd December 1894 to the several owners, drawing attention to the extremely insanitary condition of the market, and to carry out improvements suggested by the Health Department. On 11th January 1895 some of the owners expressed their willingness to carry out the improvements suggested in their own portion of the market; but as they did nothing in spite of several reminders, the Health Officer pointed out to the Chairman on 30th March 1895 that as no notice had been taken of the Secretary's letters, no further time should be allowed, but improvements at once insisted. On 2nd April 1895 the Chairman ordered a plan to be prepared, showing the drains, urinals, &c., and the Health Department on 18th May 1895 asked the Engineer Department to put up a complete plan as called for by the Chairman. Since then the Engineer Department has been dealing with the matter in communication with the Chairman. On the 29th of November 1896 notices were served on owners by that department.

6. *Rajah's Lane.*—No action had been taken previous to the Sanitary Officer's inspection. In this case notice was served to repair and put the privy in order on 27th of November 1896. Departmental action could not be taken earlier, as the takeed establishment was executing works in other wards.

7. *Rag Depôt at 157-158, Bowbazar Street.*—In this case prosecutions under section 348 have been instituted against the owner of the depôt, as will be seen from the following:—

On 1st February 1896 the party was fined Rs. 5.

A second prosecution was filed in Court on 8th August 1896, the party was fined Rs. 15 on 7th January 1897.

8. *Re Depositing Refuse after hours.*—The following statement will show the action taken:—

28th	August	1896	one prosecution:	fine	Re. 1	on 3rd January	1896.
28th	August	„	one prosecution:	fine	„ 1	on 3rd October	„
30th	September	„	one prosecution:	fine	„ 1	on 3rd December	„
1st	October	„	one prosecution:	fine	Rs. 2	on 3rd December	„
7th	October	„	one prosecution:	fine	As. 4	on 5th December	„
7th	October	„	one prosecution:	fine	„ 4	on 5th December	„

The fines imposed on this section are so nominal that the results are not beneficial.

9. Re *Stables in Chowringhee Lane.*—In this case the stable is a private one attached to premises No. 9, Chowringhee Lane. There is only one horse kept for private use, the property of the gentleman occupying the house. The stable is fairly lighted and ventilated, floor *pucka*, with satisfactory drainage arrangement. When inspected by the members of the Medical Board, the yard gully was found temporarily obstructed with straw, &c. This was removed after their inspection.

10. Re *Hackney Carriage Stand in Wellesley Square and Wellesley Place.*—The attention of the Engineer Department was drawn on the following dates, *viz.*, 17th January 1896, 4th January 1896, 12th January 1896, 5th February 1896, 23rd July 1896, and 30th September 1896, to the condition of the stands and necessity of their being paved with stone sets and hydrants provided for flushing.

30-12-96. R. MARTINDALE.

EXHIBIT G.

REPORT BY SUPERINTENDENT, SUBURBS—WARD 22.

II. *Surface Drains.*—These drains are cleaned by the Engineer's Department, and that department has carts for the removal of the excavations. It is no part of the duty of the Conservancy Department to remove anything taken out from these drains; this department has not, and never has had, any carts for the purpose, though at times, when it can be done without interfering with the conservancy work, some of the stuff is removed by conservancy carts to assist the Engineer Department and abate nuisance.

A suggestion was made to place the cleansing of these drains and removal of excavations under the Health Officer, and an estimate, amounting to Rs. 73,140 yearly, was prepared for wards 19 to 25 and sent to the Chairman on 9th January 1896, but no orders have been passed yet.

III. *Public and House Latrines.*—The two latrines at Kalighat were erected at the urgent recommendation of the Health Officer, and replaced one of a most insanitary type, similar in every respect to that now in existence at Dalhoia bustee at Watgunge, referred to by Dr. Pilgrim in his report on the condition of that ward.

The dilapidated latrine at Kassia or Woolfut Bagan bustee has been the subject of correspondence for over three years. The Health Officer recommended that it, together with the disused night-soil depôt adjoining, should be done away with, and a new latrine and depôt constructed 200 feet further off the road. This matter is still *sub judice.*

The keeper of the jamadar latrine in Jodu Babu's Bazar has recently been prosecuted twice and fined Rs. 5 and Rs. 8 on the 21st August 1896 and 8th December 1896 respectively, and will be prosecuted until he puts his latrine in such order as to admit of its being licensed.

House Latrines.—Until the underground sewers are introduced in the suburban area, it will be difficult to deal effectually with the washing of the compartments in which *gumlahs* are placed, the disposal of sullage being a very big question. There is a small establishment of carts for the removal of sullage, but it is considerably short of the requirements.

Additional carts have been asked for by the Health Officer, and the estimate, amounting to Rs. 4,875 monthly, for 300 additional carts for removal of night-soil sullage and liquid cowdung for wards 19 to 25 was considered by the S. I. Commissioners on the 15th November 1895, when the Chairman stated that the 300 carts were necessary. The matter was postponed and is still in abeyance.

A large number of insanitary prives, both *pucka* and *kutcha*, have from time to time been removed, the worst being dealt with first, and a number are at the present time under notice for improvement or demolition. One hundred and seventy-eight notices under section 286 have been served in this ward alone since 1st October 1895, and all new privies are to be on Donaldson's plan.

IV. *Compounds and Courtyards.*—There is no establishment for house-to-house inspection of compounds and courtyards; hence their insanitary condition cannot be known to the conservancy inspectors, unless some special inspection duty takes them to the premises.

Dust-bins are placed in public streets when suitable sites can be found, but this is not an easy matter, as in nearly all cases there are doors or windows of dwellings so close to proposed sites that they have to be abandoned.

Dust-bins must be at a distance of not more than 50 yards from premises before the occupiers of such premises can be called upon to use them.

Dust-bins cannot ordinarily be placed in bustees, as being private property the owners object, being generally under the impression that whenever the Commissioners place any property belonging to them on any land, that land, in the natural course of events, becomes the property of the Commissioners.

VI. *Tanks.*—There are 30 tanks under notice to be dewatered and filled up, and cases referred to the Engineering Department for action departmentally in default of compliance with notices by the owners.

Several tanks have been filled up or cleaned by owners.

VII. *Wells.*—The water of those wells is never, so far as has been ascertained, used for drinking or culinary purposes, but for washing and cleansing, and as a reserve in case of fires. It has therefore not been considered necessary by the Health Officer to fill them all up, but only to deal with such as may be within premises used as dairies.

VIII. *Stables and Cowsheds.*—The condition of most of the cowsheds and stables in this ward are such as to render it impossible to grant licenses; their sites are in very many instances objectionable.

Section 336 is freely applied, and in some cases animals are removed, but are brought back again, necessitating fresh prosecutions. One case in point is given as an example—that

of Roghu Nundun, *gowala*, of 109, Russa Road, who was last convicted and fined Rs. 100 and Rs. 3 costs on the 7th November 1896, and the animals turned out and the shed closed on the 9th November 1896: the animals were found the next morning to have been brought back.

The application of section 186 has been found unavailable, as the owners of the stables and sheds will seldom make any improvements, and there is great risk of recovery of costs should the Commissioners execute the work in default of compliance with notices. There should be a penal clause attached to section 286, by which those persons called upon to make improvements can be fined for default; this would have the effect of enforcing improvements or causing the people to remove. The fine imposed should be fixed, and not left to the discretion of Honorary Magistrates.

Report on Ward 25.

(2) See paragraph II for Ward 22.

(3) *Latrines.*—There is only one municipal latrine in this ward, situated at Dalhoia bustee; that at Sonai market is a jamadari latrine.

So far back as 1894 the Health Officer recommended that the public latrine at Dalhoia bustee be remodelled, and asked for Rs. 2,000 in the loan budget for this.

(4) *Court-yards and Compound.*—Answered by paragraph IV for Ward 22.

(5) *Tanks and Wells.*—Answered by paragraphs VI and VII for Ward 22.

(6) *Stables and Cowsheds.*—Answered by paragraph VIII for Ward 22.

(7) *Markets.*—Kali Bazar market is only newly opened, and is not yet completed. Another *pucka* range is to be added, when the *kutcha* place will be done away with. Babu Bazar market was burnt down about a year ago, and the owner has been called on to rebuild it.

H. VINCENT.

NOTE BY THE CHIEF ENGINEER ON THE POINTS RAISED IN LETTER No. 43, PARAGRAPH 6, TO MEDICAL BOARD, ADDRESSED TO THE GOVERNMENT OF BENGAL, DATED THE 30TH OF NOVEMBER 1896.

Pollution of Subsoil.—The road surface in any town in which rubbish is deposited in the streets is no doubt liable to pollution, and this is the case in Calcutta. The remedies are—

There is at present considerable difficulty about this, but it can be overcome, and should be.—H. C. W.

(1) To enforce the regulations with reference to dust-bins.

Very good, but expensive.—H. C. W.

(2) To have the roads with stone sets laid on concrete or other impervious material

Should be done.—H. C. W.

(3) At least to pave sections of the road reserved for the deposit of rubbish.

The road scraping appears from the Health Officer's Memorandum to be entirely neglected. The Road Department considers that road-scraping comes within the definition of road-sweeping. The Engineer's Department is supposed to put on the road-watering coolies to assist in road-cleansing in wet weather, but there is no special establishment for road-scraping, and in consequence of a dual control the work is badly done and nobody's business.

1. The proposition to use what the Assistant Health Officer describes as a perchloride of mercury lotion to 400 miles of streets in the city and suburbs by special watering carts is, I consider, dangerous and impracticable. A very large volume of lotion would be required to disinfect the subsoil to a depth of over a foot; it is extremely doubtful if the result would be worth the expense and risk.

This agrees with the Health Officer's Report.—H. C. W.

Disposal of House Refuse.

See paragraph 11.—The Act must insist on each person having a proper dust-bin or receptacle.—H. C. W.

3. I have fully discussed this question in my Note of the 14th January.

Overcrowding of Houses.

4. The measures to prevent overcrowding must rest with the Health Officer and the Police.

5. The new Building Act will probably deal with areas overcrowded with buildings, and in my opinion *half the gross area* must be reserved for roads and yards in any arrangement intended to secure proper ventilation.

No new building.—H. C. W.

6. It must be made a condition that no new building must be sanctioned which has not a frontage on a 40 feet road.

Public Latrines.

7. This question has been dealt with in my Note of the 14th January. There are several good patterns of latrines in use in the Municipality.

Private Privies.

8. The question of privies is an extremely simple one—

(1) They must be covered, and the covering is unimportant, and they must be ventilated.

(2) They must have an impervious floor at a suitable level, properly sloped and connected with a surface drain.

(3) The seats must be either of the water-closet pattern with flushing arrangements, and in this case they must be connected with the sewer, or they may be of the pan or bucket pattern, in which case it is necessary either that there should be pail depôts within the premises or within a short distance from the premises through which the stuff may be delivered into the sewers with a sufficient flush. It is in my opinion impossible for the Corporation to undertake the Herculean task of cleansing 50,000 privies by hand, and the time has now arrived when we can safely treat our rate-payers as intelligent citizens, well able to carry out their responsibilities to the public. There are black sheep in every flock, and no doubt prosecutions will be necessary to keep their responsibilities constantly before the public, and a few prosecutions firmly dealt with will, I think, secure the necessary attention to the bye-laws.

9. In my opinion the house-sweeper-service may be abolished as fast as pail depôts can be established in bustee areas and as fast as bye-laws requiring either the connection of the privy with the sewer or the construction of pail depôts within the better class of premises can be enforced.

House-connections and House-drains.

10. I attach the regulations relating to house-connections; upwards of 29,000 houses have been connected with the sewers under these regulations. They are out of date, and require revision in several particulars.

11. There is an establishment of 9 Inspectors appointed to supervise the carrying out of house-drains, and they are assisted by 169 licensed plumbers. The licensed plumbers do bad work at low rates, and there is excessive competition, and the profits are too low to attract the best workmen.

12. In a properly organized system the licensed plumbers are the Engineer's right-hand men in carrying out house-connections, and municipal establishment to give close supervision to 30,000 house-connections is out of the question. About 50 reliable licensed plumbers working on a schedule of rates sanctioned by the Corporation will do more work than paid Inspectors. The 9 Inspectors visit about 6,000 houses per annum and go over their work once in five years. Much of the time is taken in dealing with applications for fittings and with prosecutions. The establishment costs Rs. 18,000 a year, and in my opinion the results are not worth the expenditure, and our control is exceedingly weak. Directly you appoint a department to look after Calcutta the control is weak in all branches of the administration. I do not mean to say that control over house-connections is not wanted, in fact, a very much stronger control is wanted than now obtains, but establishing special departments is a wrong principle to go on.

13. I beg to direct attention to my Note, dated the 11th December 1896, on the amalgamation of the Road and Conservancy Departments, for the remedies. Briefly, I propose that there should be a well paid properly trained Overseer in every ward in charge of all branches of the administration, including road cleansing. That to give the necessary administrative vigour to the organisation, at least four Superintendents of the right sort should be appointed who must live in the centre of these districts.

14. I propose to have a sarkar in each ward paid at Rs. 20 to Rs. 30 per month to replace the present House-drainage Inspectors, who are too highly paid, and to reduce the number of licensed plumbers from 161 to 50, viz., two to each ward, and insist on their working to standard specifications at fair rates fixed by the Corporation to secure good work.

15. The general effect of these measures will be to multiply the supervision over house drainage by three, and to make the licensed plumbers more useful as agents of the Corporation in these matters.

16. The bye-laws with regard to house drainage and the responsibility of the house-owners and occupiers in maintaining the drains in good order must be revised and rigidly enforced by an independent judicial agency, and the executive staff must be relieved of prosecutions and attendance in Court, which emasculates them as executive officers, by a properly constituted legal department.

17. An Overseer can make himself thoroughly acquainted with all the circumstances of a ward in all departments, and will have no difficulty in ascertaining the streets and quarters when the house drainage requires special attention; the appointment of special departments undermanned, with reference to the large areas which have to be covered, is always unsatisfactory and wasteful.

18. The whole question of the amalgamation of the road and conservancy resolves itself into this, that to secure economical results one of two courses must be pursued—either the road must be made over to the Health Officer or the Conservancy to the Engineer.

19. The function of the Health Officer should be purely critical, and his chief duty is to point out defects in the working of departments and in the bye-laws likely to influence the public health; to establish a dual control with the Engineer over such

operations as carting and road cleaning is in my opinion clearly wasteful and a misdirection of his energies.

20. *Surface Drains.*—The remarks of the Medical Inspectors probably apply to an old pattern of surface drain made with half pipes laid in concrete. These are being replaced by kerb and channelling, as it is found that they wear badly and cannot stand cart-traffic. As far as I have seen them, the surface drains in bustees are as a general rule in good order where they are fairly treated and properly cleaned and flushed.

A. J. HUGHES, M.I.C.E., C.I.E.,

The 20th January 1897. *Chief Engineer to the Corporation.*

CORPORATION OF CALCUTTA.

DRAINAGE DEPARTMENT.

RULES FOR GUIDANCE OF HOUSE DRAINAGE CONTRACTORS.

THE following sections of Act II (B. C.) of 1888 refer to these matters:—

Section 229.—No person shall deposit any building materials, or make a hole in any public street without the permission of the Commissioners in writing, and when such permission is granted to any person he shall at his own expense cause such materials or such hole to be sufficiently fenced and enclosed, until the materials are removed or the hole is filled up and otherwise made secure, and shall cause the same to be sufficiently lighted at night, and if he neglect to sufficiently fence or light the same, and any damage or injury arises, he shall be liable to the Commissioners for any expense which they may incur by reason of such neglect.

Section 276.—Whoever, without the written consent of the Commissioners first obtained, makes or alters any drain leading into any of the sewers or drains vested in the Commissioners by this Act, shall be liable to a fine not exceeding Rs. 200.

Only persons authorized under these sections of the Municipal Act will be allowed to open the public roads and to construct house drains and connect them with the public sewers; such persons must strictly observe the following rules and conditions to which they will be required to affix their signatures respectively:—

1. Application for permission to open road and to connect house drain with sewer must be submitted in writing one clear day before the day fixed for the work, and must be accompanied by a fee of Rs. 2 for each connection. It must also be certified in such application that the internal drainage has been carried out in conformity with the sanctioned plan.

Permission to make sewer connection on Sunday or at night must be specially applied for, and will be granted only in cases of proved urgency. For Sunday work an additional fee of Re. 1 and for night work, unless executed on account of the tramway, an additional fee of Rs. 5 for each connection, must be deposited. If the night work is requisite in the interest of the tramway and to avoid detention to the running of cars, the fee must be paid by the Tramway Company, otherwise the work must be executed as in other cases in the day-time.

The contractor must obtain a license from the Road Department before depositing materials in the street.

2. The days on which connections may be made in the different wards are notified from time to time on the Notice Board at this Office.

All connections with street sewers must be made in the presence of an Inspector and precisely at the hour noted in the road-opening permit.

The contractor must also be present at the time of making the connection.

In the event of a contractor not being ready to make the sewer connection at the hour appointed, and thereby necessitating a subsequent attendance of the Inspector, a further fee of Re. 1 will be charged for every such attendance, cases of stress of weather or specially bad soil being excepted.

3. The internal drainage of premises, as marked on the plan passed by the Engineer, must be strictly carried out in every particular, and any alteration suggested by the owner or otherwise must be approved of and sanctioned by the Engineer in writing before being carried out.

The trenches are not to be filled in over drains until the work has been inspected and tested by the Municipal officer.

The sanctioned plan must accompany the application to the Engineer when permission to connect is applied for. The Municipal Inspector will have to attach his certificate countersigned by the Superintendent of House Drainage, that the work has been properly executed in all respects.

Only plans made by the Engineer's Department, or by competent persons approved by the Engineer, will be admitted.

The sanctioned plan must in all cases be kept on the ground for reference during progress of the work.

Connection with the street sewers will not be permitted until the internal drainage of the premises has been carried out in accordance with the sanctioned plan. This rule applies equally to the underground pipes and their adjuncts and to the pucka surface drains marked on the plan.

4. When opening the road the soling bricks and the road metal must be carefully kept apart and relaid by the contractor in a proper manner, the newly restored surface being in every case kept well to the original road level, any sinkage to be made good by the contractor. The filling of the trenches must be done with great care in horizontal layers properly rammed and watered.

In all cases where the filling of the trench is improperly done, or the restoration of the road surface effected in an inefficient manner, or when sinkage takes place, the defects, if not promptly remedied by the contractor, will be remedied by the Department without notice, and the cost recovered from the contractor concerned including an extra fee of Rs. 5.

The contractor will further be held personally responsible for damages or accidents resulting from any carelessness or deficiency on his part in filling the trench or restoring the road-surface.

5. The work in the public streets must be executed with all possible promptitude and despatch, and inconvenience to the public and obstruction to traffic must in all cases be carefully guarded against. To this end the contractor must, before opening the road, ascertain the position of the street sewer, and if the connection trench has to be carried beyond the centre of the street, one-half of the street width only must be cut open at a time and the other half left open for traffic, the excavation in every case duly protected by substantial fencing.

In narrow streets or lanes, where a carriage cannot turn, the entrance must be barricaded in such a way as to indicate clearly the temporary closing of the street or lane to traffic.

6. In all cases where permission has been granted to effect sewer connection at night, the trench must be very substantially protected by fencing and effectually marked by proper lights, and the contractor must keep the necessary establishment and means on the ground to keep the lights properly trimmed and burning brightly.

The contractor will be held personally responsible for accidents resulting from insufficient lighting or fencing of the connection trench.

7. All materials, including stone-ware pipes and castings, whether to be used for external or internal work, must be of the best quality, and are subject to approval or rejection by the Superintendent or Inspector. All doubtful or disputed cases are to be submitted to the Engineer, whose decision shall be final.

8. All work, within as well as without the premises, must be executed with due care and in the best and most workmanlike manner. The walls of all masonry-pits or manholes must be not less than 10 inches in thickness and built in cement mortar with proper bond. The floors of the junction or bend-pits must be made to follow the curvature of the pipe inverts, and must be plastered with cement. The inner face of all pits must be plastered with cement and made perfectly water-tight.

All surface drains to be built in cement mortar and provided with a good substantial pucka foundation of concrete or brickwork.

9. Every premises must have a master-trap on its sewer connection of a pattern approved by the Engineer. Such master-trap must have not less than 3 inches of water-seal, and its house side must have direct air connection. It must be arranged to give ready access to the sewer connection for cleaning purposes and be provided with a cast-iron cover at ground level.

10. All inlets must be provided with traps of cast-iron or glazed stone-ware, giving not less than 3 inches of water-seal, and have suitable gratings.

11. All drain pipes must be laid in true lines both as to direction and gradient. They are to be well bedded in concrete, their joints are to be of cement only put in stiff with as little water as possible with a caulking iron, a spring hoof of iron or steel is to be used inside the joint to prevent the cement getting into the pipe while the joint is being made. The inside of pipe is to be wiped perfectly clean, and the outside of joint finished all round full with cement.

12. Where drain pipes are of necessity carried under rooms, they are to be of cast-iron coated with anti-corrosive varnish and to be solid lead jointed.

13. On no account is any pipe or any sewer or drain adjunct to be so laid or constructed as to enclose a water-pipe or any connection to a water-pipe.

14. A fall of not less than 1 foot in 50 feet for 4-inch and 1 foot in 100 feet for 6-inch pipes must be given, and all cases where such a fall cannot be obtained must be reported to the Engineer, and special instructions applied for. An iron ventilating-pipe, not less than 4 inches diameter, must be carried up from highest end of house drain to at least 7 feet above roof level of the highest adjacent building.

15. In effecting junctions with pipe-sewers, care must be taken to relay such sewer pipes as may have to be lifted for the purpose of placing the junction pipe at the proper level and to restore the joints. This applies to cases where junction pipes have not been put in during construction of the street-sewer. Square junctions will not be allowed. On no account will any connections be allowed between the master-trap and the sewer.

16. In junctions with brick-sewers the brick-work round the junction pipe must be carefully rebuilt in cement as also the inner face of the sewer, and to facilitate this, the two nearest manholes must in every case be opened. Manholes, while open, must be properly protected by temporary fencing to prevent accidents.

Connections with brick-sewers should generally be made at the following heights above invert level:—

	Ft.	In.		Ft.	In.
No. 1 sewer	... 3	0	No. 6 sewer	... 2	0
„ 2 „	... 2	9	„ 7 „	... 1	9
„ 3 „	... 2	7½	„ 8 „	... 1	7½
„ 4 „	... 2	6	„ 9 „	... 1	6
„ 5 „	... 2	3	„ 10 „	... 1	3

17. When the work has been completed, and before the trenches or excavations are filled in, it is to be tested throughout in the following manner:—

The lower end of the drain pipe where it enters the master-trap is to be closed with a water-tight plug and the pipe to be filled with water from the opening at its high end to ground level, the water pressure so obtained is to remain on for not less than six hours under the supervision of the Municipal Inspector, who is to report the result to the Superintendent for orders. Each length of drain pipe from pit to pit or manhole to manhole can be treated in this way.

18. All surplus earth and debris must be promptly removed by the contractor after completion of work.

19. Each and all of the foregoing rules, as well as such other rules as the Commissioners may hereafter from time to time find it necessary to issue, must be strictly complied with. Any breach thereof will subject the licensee to suspension or forfeiture of license.

ENGINEER'S OFFICE;
Dated 16th November 1893.

JAMES KIMBER, M. INST. C.E.,
Engineer to the Corporation.

THE undersigned has had carefully read and explained to him the foregoing rules and conditions, and has been supplied with a copy thereof, and he agrees to observe them in every particular, subject in case of breach of any or either of them on his part to forfeiture of his license as Authorized House-Drainage Contractor.

Signed by

Carrying on business at

In the presence of

(Reproduced from Sir Henry Harrison's order of 3rd May 1889.)

POWERS OF EXECUTIVE OFFICERS UNDER SECTION 61 OF ACT II (B. C.) OF 1888.

By this section the Chairman may exercise all the powers vested by the Act in "the Commissioners." This, of course, does not include the powers vested in "the Commissioners in Meeting," and it is subject to certain other limitations set forth in the next paragraph. This general power suffices, so far as the Chairman is concerned, to enable him to carry on the executive duties of the Corporation.

As regards the Vice-Chairman, the Act says that "he may exercise the same authority as the Chairman on behalf of the Commissioners, subject to his general direction and control." So far as the Vice-Chairman is concerned, therefore, no further action is necessary to enable him to exercise his executive functions on behalf of the Commissioners. Any directions given by the Chairman have the effect of limiting and controlling, not of amplifying, his powers, which are complete without any specific assignment.

As regards the other executive officers of the Corporation, however, the provision made for the exercise by them of their functions was, after much discussion and consideration in Select Committee, finally embodied in the following clause:—

"All powers which may lawfully be exercised by the Chairman shall be deemed to have been exercised by him if exercised by any subordinate officer acting in the execution of the duties assigned to him by the Chairman.

The effect of this is that it is necessary for the Chairman to assign definite duties to all officers, other than the Vice-Chairman, who are to exercise any of the powers vested in "the Commissioners" by the Act. Such duties having once been duly assigned, the order of the officer concerned will have the legal effect of an order of the Chairman, and, therefore, under section 61, will carry with it the statutory authority of "the Commissioners," but till power is thus assigned it will, so far as the law is concerned, be *ultra vires* to exercise it.

CHAIRMAN.

Chairman.

The following statutory powers conferred on the Commissioners by the Act are reserved by the *Chairman* for exercise by himself alone, and should not for the present be exercised by any other officer of the Corporation without his approval and signature:

Provided that, in the case of absence of Chairman or urgency, such orders may be issued by the Vice-Chairman.

Section 3.—To determine procedure applicable to lands or buildings to which definition does not apply.

Section 84.—Take possession of carriage or animal.

Section 85.—Order—restoration or sale of carriage or animal.

Section 128.—Determine manner in which list shall be published annually.

Section 129.—Divide Calcutta into districts.

Section 149.—Suit for rate.

Section 154.—Fix sum to be paid by applicant.

Section 181.—Divide Calcutta into districts, and appoint Registrars and Sub-Registrars.
Section 192.—Appoint time for census.
Section 203.—All except temporarily closing public streets.
Section 204.—Fix conditions for reconveyance.
Section 205.—Dispose of site.
Section 206.—Prescribe a line.
Section 207.—Fix compensation.
Section 208.—Prepare plan of proposed public streets.
Section 209.—Allow house to be set forward.
Section 215.—Issue notice to owners or occupiers; execute in default and settle proportions.
Section 216.—Declare private to be public street.
Section 221.—Order prosecution.
Section 222.—Cause projection to be removed.
Section 223.—Remove verandahs, &c., on breach of condition.
Section 234.—Sell materials in default.
Section 240.—Cause house to be demolished.
Section 241.—Cause work to be demolished.
Section 242.—Order prosecution.
Section 248.—Cause hut to be demolished or altered.
Section 249.—Order prosecution.
Section 251.—Define external limits of bustee.
Section 252.—Serve notice on owners, consider plan, order modifications, and finally approve.
Section 254.—Hear objections.
Section 255.—Require hut to be taken down and give compensation; serve notice to construct roads, &c.
Section 259.—Cause work to be executed in default, and fix reasonable compensation.
Section 261.—Acquire other than bustee land.
Section 265.—Agree to make street public.
Section 266.—Give express consent.
Section 271.—Carry out complete system of drainage.
Section 223.—Construct new sewers, &c.
Section 274.—Make alteration in bed of river.
Section 277.—Construct in default and require court-yard to be paved.
Section 281.—Cause work to be supervised and order alterations, &c.
Section 282.—Order group drainage and fix proportion.
Section 283.—Require owner to allow connection.
Section 298.—Fix hours for deposit.
Section 305.—Appoint places.
Section 306.—Fix the amount of fee.
Section 311.—Cancel licenses.
Section 314.—Grant special permission.
Section 315.—Require owner to fill up and execute in default.
Section 319.—Apply to Magistrate to prohibit and certify in writing.
Section 320.—Apply to Magistrate to prevent overcrowding.
Section 323.—Issue public notice.
Section 324.—Direct removal to hospital.
Section 325.—Issue written notice and cause building to be cleansed.
Section 326.—Take measures for destruction of hut, and pay compensation.
Section 327.—Notify places and give compensation.
Section 338.—Set apart public bathing-ghat, &c.
Section 340.—Provide suitable places.
Section 341.—Close slaughter-house.
Section 346.—Grant license.
Section 349.—Issue notice.
Section 350.—Fix rents, tolls and fees.
Section 352.—Expel vendor from market.
Section 353.—Sell or let to tenants.
Section 358.—Apply to Magistrate.
Section 364.—Institute proceedings.
Section 366.—Direct prosecution.
Section 370.—Provide local standards.
Section 371.—Fix times and places, and appoint Municipal officers.
Section 373.—Cause survey and measurement to be made, and require plan to be deposited.
Section 379.—Grant permission.
Section 384.—Grant licenses, and revoke or cancel licenses.
Section 388.—Order complaint.
Section 426.—Direct suit.
Section 428.—Make compensation.
Section 429.—Fix fee.
Section 433.—Sanction forms.

Section 437.—Pass orders upon objection.
Section 441.—Require payment by occupier.
Section 443.—Apportion expenses among owners or occupiers.
Section 444.—Certify.
Section 446.—Grant approval.
Section 449.—Determine which of such persons is entitled or bound.
Section 451.—Take engagements.
Section 455.—Exempt hut-owner.

Vice-Chairman.

The Vice-Chairman will exercise more immediate control over the Account Department, the Warrant Department, the License Department, the Store Department, the Treasury and the Loan Department. He will, in general, discharge the duties of a Controller of Accounts, pass bills subject to Budget sanction, sign cheques, and satisfy himself that all receipts are properly accounted for. He will also superintend the realisation of bills issued by all Departments, and open all tenders.

Vice-Chairman.

The Chairman relies on him to see that Budget grants are not exceeded. In arrangement with the Chairman he will hear the bulk of the assessment appeals under section 136, and (sitting with three Commissioners) of the trade and profession license appeals under Schedule II, clause 7 (*e*).

In the absence of the Chairman, or in cases of urgent necessity, he will exercise the powers enumerated above as reserved to that officer, and will, of course, without any assignment, exercise the powers of the Commissioners under any other section as occasion may call for it.

Secretary.

The Secretary is empowered to sign all letters issuing on behalf of the Commissioners, or of the Chairman, and all orders after satisfying himself that the order has been passed by an officer entrusted with due authority to pass it. He is entrusted with the seal of the Corporation and with the custody of valuable documents, contracts and records. He will expressly see that all notices of Meetings are duly issued, and that the terms of the Act regarding such notices are complied with.

Secretary.

Wherever any section of the Act empowers the Commissioners to serve a notice requiring any person to take any action, the notice must be signed by the officer to whom the powers of directing the issue of the notice have been delegated under the present rules. The Secretary is, however, authorised to sign notices on behalf of the Chairman or Vice Chairman on his satisfying himself that the Chairman or Vice-Chairman has explicitly or impliedly authorised the issue of notice.

Engineer.

The Engineer will exercise the powers necessary for the efficient performance of the duties of a Chief Engineer of a large city. He will directly supervise and control what are ordinarily known as the Water-Works Department, the Drainage Department and the Road Superintendent's Department. He will also have under his orders the Workshop Superintendent and Workshop Establishment, the Municipal Railway establishment, and the Salt-Water Lake establishment. The maintenance and repairs of all the Municipal buildings and machinery is also placed under his general supervision.

Engineer.

More especially the Engineer will exercise the statutory powers conferred on the Commissioners in the following sections of the Act:—

Section 62.—Make contracts up to Rs. 1,000 in value with the express or implied consent of the Chairman.
Section 150.—Provide a supply of water and cause mains and pipes to be laid, &c.
Section 154.—Supply water through meter for other than domestic purposes, and lay down pipes, &c.
Section 155.—Provide a water-meter at their own expense.
Section 156.—Substitute unfiltered for filtered water.
Section 157.—Direct size and description of cistern.
Section 158.—Allow persons to lay down communication-pipes, permit use of larger ferrule, replace ferrule, turn off or cut off supply and fix character, &c., of communication pipes.
Section 159.—Fix terms and charges with persons requiring supply, and require amount to be deposited.
Section 160.—Enter any house or land.
Section 161.—Cause water to be turned off or cut off.
Section 162.— Ditto ditto.
Section 163.—Allow person not residing in Calcutta to take water.
Section 166.—Issue licenses, and lay down rules and regulations.
Section 169.—Authorise officer.
Section 170.—Cancel license.

Section 179.—Lay open and examine pipes, and take necessary measures to purify water.
Section 203.—Temporarily close any street, or part of a public street.
Section 210.—Maintain and repair public street.
Section 212.—Water public streets.
Section 212.—Allow temporary erections and remove obstructions.
Section 213.—Sanction making and draining of new street.
Section 219.—Issue notice, and alter in default.
Section 220.—Issue notice to put up pipes.
Section 221.—Issue notice in writing, remove projection, &c., in default.
Section 223.—Give permission to put up verandahs, &c.
Section 224.—Give consent in writing, issue notice and declare erection dangerous.
Section 225.—Give notice to owner or occupier, and cause hedges or trees to be cut in default.
Section 226.—Open or break up public street.
Section 227.—Issue notice to person concerned.
Section 228.—Alter in default.
Section 229.—Give permission in writing.
Section 230.—Cause hole to be filled up and detain materials.
Section 231.—Issue notice in writing and repair, &c., in default.
Section 233.—Put up fencing and issue notice in writing, and repair in default.
Section 235.—Sanction site, and decline to sanction site.
Section 236.—Receive applications.
Section 237.—Sanction building, and decline to accept plan as sufficient.
Section 238.—Pass orders in writing, approving or disapproving.
Section 243.—Sanction levels, and give consent under clause (*d*).
Section 245.—Give written permission.
Section 247.—Prescribe details, and express approval or disapproval in concert with Health Officer.
Section 253.—Prepare a plan with sanction of Chairman.
Section 275.—Give written consent, and cause branch drain to be demolished.
Section 278.—Construct portions of drains
Section 279.—Require separate drains.
Section 280.—Issue licenses.
Section 282.—Issue notice under clause 8.
Section 284.—Provide traps, &c., and issue notices and provide in default.
Section 285.—Fix pipes to house.
Section 286.—Control and survey branch drains, and execute in default.
Section 290.—Order inspection, &c.
Section 295.—Provide water-courses, &c.
Section 296.—Take proper precautions.
Section 393.—Enter upon house or land and execute work.
Section 394.—Enter upon land, make temporary use thereof, and issue notice.
Section 395.—Exercise powers.
Section 430.—Charge rent.
Section 431.—Authorise person to call on licensee to produce license.
Section 438.—Supply estimate.

Of the above powers, the following may be exercised by the subordinates of the Engineer enumerated below, subject to his general control:—

Assistant Engineer, Water-Works.

Section 154.—Supply water through a meter for other than domestic purposes, and lay down pipes, &c.
Section 155.—Provide a water-meter at their own expense.
Section 157.—Direct size and description of cistern.
Section 158.—Allow persons to lay down communication pipes, permit use of larger ferrule reserved to Engineer, replace ferrule, turn off supply, or cut off and fix character, &c., of communication-pipes.
Section 159.—Fix terms and charges with persons requiring supply, and require amount to be deposited.
Section 160.—Enter any house or land.
Section 161.—Cause water to be turned off or cut off.
Section 162.— Ditto ditto.
Section 165.—Allow persons not residing in Calcutta to take water.
Section 169.—Authorise officer.

Assistant Engineer, Drainage Department.

Section 275.—Give written consent, and cause branch drain to be demolished.
Section 278.—Construct portions of drains.
Section 282.—Issue notices under clause 3.
Section 282.—Provide traps, &c., and issue notices and provide in default.
Section 285.—Fix pipes to house.

Section 286.—Control and survey branch drains, and execute in default.
Section 290.—Order inspection, &c.
Section 295.—Provide water-courses, &c.
Section 296.—Take proper precautions.
Section 298.—Enter upon house or land, and execute work.
Section 394.—Enter upon land, make temporary use thereof, and issue notice.

Superintendents, Roads Department.

Section 210.—Maintain and repair public streets.
Section 212.—Allow temporary erections, and remove obstructions.
Section 219.—Issue notice and alter in default.
Section 220.—Issue notice to put up pipes.
Section 221.—Issue notice and remove projection, &c., in default.
Section 223.—Give permission to put up verandahs, &c.
Section 224.—Give consent in writing, issue notice and declare erection dangerous.
Section 225.—Give notice to owner or occupier, and cause hedges or trees to be cut in default.
Section 226.—Open or make up public street.
Section 227.—Issue notice to persons concerned.
Section 228.—Alter in default.
Section 229.—Give permission in writing.
Section 230.—Cause hole to be filled up and detain materials.
Section 231.—Issue notice in writing, and repair, &c., in default.
Section 233.—Put up fencing and issue notice in writing, and repair in default.
Section 236.—Receive applications.
Section 237.—Sanction building, and decline to accept plan as sufficient.
Section 238.—Pass orders in writing, approving or disapproving.
Section 243.—Sanction levels and give consent under clause (*d*).
Section 245.—Give written permission.
Section 247.—Prescribe details, and express approval or disapproval in accordance with rules drawn up in concert with the Health Officer.
Section 430.—Charge rent.
Section 431.—Authorise person to call on licensee to produce license.

Water-Works Inspectors.

Section 160.—Enter house or land in order to examine pipes and water-fittings.

Drainage Inspectors.

Section 290.—Inspect drains, &c.; issue one hour's notice of intention to clean out drain and remedy defect.

Of course it does not follow that these subordinates will always exercise, *without reference to the Engineer*, the powers assigned to them; the Engineer should make them clearly understand that they should always consult him in all matters of importance as heretofore, and he will be generally responsible to the Commissioners and myself for all orders issued by his subordinates. The object of assigning power is not to limit responsibility, but to enable the subordinate's action to be legally valid. The same remark applies to the powers conferred on the Engineer. The Chairman expects that the Engineer will, as heretofore, freely consult him before issuing any compromising order, or taking any action which ought not to be taken without Chairman's knowledge and approval.

Health Officer.

Health Officer.

The Health Officer will, in a general way, exercise the powers necessary for the efficient performance of duties of the Chief Executive Officer of health in a large city. He will directly supervise and control what are ordinarily known as the Conservancy Department, the Nuisance Department and the Bustee and Sanitary Department. He will also have under his orders the Assistant Health Officer and his own Office, the Food Inspectors, the Medical Inspectors, the Analyst to the Corporation, the Deputy Superintendent of Vaccination and his establishment, all officers and subordinates engaged in the registration of births and deaths, whether at the Registration Offices or at the burning-ghâts and burial-grounds, the Gowkhanna Superintendent and establishments, and the Superintendent of the Slaughter-house. All the markets of the town are also placed under his general supervision.

More especially the Health Officer will exercise the statutory powers conferred on 'the Commissioners' in the following sections of the Act:—

Section 62.—Make contracts up to Rs. 1,000 in value with the express or implied consent of the Chairman.
Section 153.—Test purity of water.
Section 181.—Keep registers of births and deaths.
Section 182.—Cause list to be printed and published.
Section 183.—Cause registers to be prepared and printed.

Section 186.—Receive notices.
Section 187.— Ditto.
Section 270.—Issue notice to cleanse and cleanse in default.
Section 286.—Control privies, cess-pools, cow-houses and stalls and the drains leading thereto and execute in default.
Section 287.—Issue notice and execute work in default.
Section 288.—Cause amendment or alteration to be made in default.
Section 290.—Order inspection, &c.
Section 292.—Grant permission in writing, and issue written notice.
Section 294.—Issue notice and construct in default.
Section 298.—Put up dust-boxes.
Section 303.—Appoint hours, fix kind of cart and route.
Section 304.—Give public notice thereof.
Section 307.—Cleanse premises.
Section 309.—Cause notice to be given, and execute in default.
Section 310.—Provide and maintain necessaries, &c.
Section 311.—License necessaries.
Section 313.—Maintain an establishment.
Section 314.—Require owner or occupier to fill up excavation, and execute in default.
Section 317.—Inspect premises.
Section 318.—Require owner to lime-wash and cleanse.
Section 321.—Prescribe form and details.
Section 322.—Enter and inspect, and take measures.
Section 327.—Direct destruction of bedding.
Section 329.—Approve of measures to disinfect.
Section 332.— Ditto ditto.
Section 335.—License places.
Section 336.—Turn out animals and close place.
Section 344.—Approve drains, cause floors to be paved and fix precautions, and issue notice.
Section 363.—Apply to Magistrate.
Section 364.—Prosecute for adulteration.
Section 365.—Enter into and inspect, &c.; order seizure.
Section 367.—Apply to purchase.
Section 368.—Grant license.
Section 369.—Enter and inspect.
Section 375.—Have access to register.
Section 387.—Serve notice to abate nuisance, and abate in default.
Section 391.—Enter premises and abate nuisance.
Section 393.—Enter upon house or land, and execute work.
Section 394.—Enter upon land, make temporary use thereof and issue notice.
Section 431.—Grant authority to inspect license given by his orders.
Section 438.—Supply estimate.
Section 453.—Grant permission.

Of the above powers, the following may be exercised by the subordinates of the Health Officer enumerated below, subject to his general control.

I.—Assistant Health Officer.

Section 187.—To receive notices.
Section 317.—Inspect premises.
Section 318.—Require owner to lime-wash and cleanse.
Section 322.—Enter, inspect and take all necessary measures.
Section 327.—Direct destruction of buildings; approve of measures to disinfect.
Section 329.— Ditto ditto ditto.
Section 332.— Ditto ditto ditto.
Section 334.—Approve drains, cause floors to be paved, and fix precautions and issue notices.
Section 375.—Have access to register.

The following powers also may be exercised by the Assistant Health Officer subject to the general control of the Health Officer:—

Section 292.—Issue notice on persons who keep a latrine, &c., within fifty feet of a public tank, or tank used by the inhabitants of a locality.
Section 293.—Prosecute for failure to comply.
Section 294.—Cause additional privies to be provided.
Section 387.—Serve notice in case of nuisance.
Section 388.—Prosecute in such cases.

II.—Superintendents of Conservancy.

Section 270.—Issue notices to cleanse in default.
Section 286.—Control privies, cess-pools, cow-houses and stalls and the drains leading thereto, and execute in default.

The following powers may be exercised by Conservancy Superintendent subject to the general control of the Health Officer:—

Section 318.—Require cleansing and lime-washing.

Section 289.—Prosecute persons for making or altering drains contrary to the orders of the Commissioners.

Section 292.—Prosecute for throwing rubbish, &c., into sewers and drains.

Section 299.—Prosecute for not depositing in dust-bin.

Section 300.—Prosecute for depositing rubbish in public place.

Section 302.—Prosecute for allowing offensive matter to flow.

Section 307.—Prosecute for keeping offensive matter on premises.

Section 312.—Keeping public necessary in filthy state.

Section 287.—Issue notice and execute work in default.

Section 288.—Cause alteration, or amendment to be made in default.

Section 290.—Order inspection, &c., of Section 286.

Section 298.—Put up dust-boxes.

Section 307.—Cleanse premises.

Section 309.—Cause notice to be given and execute in default.

Section 314.—Require owner or occupier to fill up excavations, and execute in default.

Section 393.—Enter upon house or land, and execute work.

Section 394.—Enter upon land, make temporary use thereof, and issue notice.

Section 438.—Supply estimate.

Section 453.—Grant permission.

III.—Medical Inspectors.

Section 317.—Inspect premises.

Section 322.—Enter and inspect, and take all necessary measures.

Section 329.—Approve of measures to disinfect.

Section 332.— Ditto ditto.

Section 344.—Approve drains, cause floors to be paved, and fix precautions and issue notices.

IV.—Food Inspectors.

Section 363.—Apply to Magistrate.

Section 365.—Enter into and inspect, &c.; order seizure.

Section 367.—Apply to purchase.

Section 369.—Enter and inspect.

V.—Analyst.

Section 153.—Test purity of water.

The remarks made respecting the exercise of powers by the Engineer and his subordinates apply also to those exercised by the Health Officer and his subordinates.

Collector.

Collector.

The duties of the Collector are to collect all rates due to the Corporation in Wards 1 to 16, as also all miscellaneous bills made over to him for that purpose by the officers of the Corporation. He should present all rate-bills at least twice (if not paid on first presentation) within the quarter to which they relate, and at the end of quarter transfer such as are unpaid to the Warrant Superintendent. Similarly, after keeping miscellaneous bills for three months and presenting them not less than twice, he should transfer them to the Warrant Superintendent at the end of that period unless any written objection has been preferred by the payee, in which case the bill with the objection should be sent to the Vice-Chairman for orders before its transfer to the Warrant Superintendent.

Apparently the only statutory power vested in the Commissioners which the Collector should exercise is—

Section 141.—Cause rate-bills to be presented. This power is, therefore, conferred upon him in Wards 1 to 16.

The Joint-Collector will exercise the same powers as the Collector in Wards 17 to 25.

Assessor and Surveyor.

Assessor.

The Assessor and Surveyor will exercise the powers necessary for the assessment of all houses and bustee lands in Calcutta and for the survey of all premises regarding which there are boundary disputes. He will have the custody of the survey maps and records of the town. He will also exercise direct control over the Bill Department, and will receive back from the Warrant Department all irrecoverable rate-bills, recover what he can, and lay the rest before the Vice-Chairman for orders.

More especially he will exercise the statutory powers conferred on the Commissioners in the following sections of the Act:—

Section 109.—Receive notices of vacancies.

Section 111.—Receive notices and grant refund.

Section 115.—With sanction of Chairman and Vice-Chairman, impose entire consolidated-rate upon owner.

Section 118.—Cause land and huts to be separately valued.
Section 120.—Issue notice to occupiers.
Section 123.—Assess houses, and, with sanction of Chairman, retain valuation, or make a revaluation.
Section 124.—Value bustee lands.
Section 126.—Revalue house.
Section 127.—Revalue on application of owner or occupier.
Section 128.—With approval of Chairman or Vice-Chairman, determine number of assessment-books, enter name of owner or occupier in assessment-book, and determine which owner or occupier is entitled to be registered.
Section 130.—Require owner or occupier to furnish returns, authorise persons to inspect, survey and measure.
Section 132.—Give public notice.
Section 133.—Give special notice.
Section 134.—Issue notice or special notice.
Section 135.—Receive notices.
Section 139.—Enter valuations in assessment-book.
Section 140.—Receive applications in writing.
Section 217.—Put up names.
Section 218.—Fix numbers.
Section 264.—Receive notices.
Section 393.—Enter upon house or land and execute work.
Section 435.—Call upon owners to appoint one of their numbers.
Section 440.—Recover some due.
Section 451.— Ditto.

Warrant Superintendent.

Warrant Superintendent.

The Warrant Superintendent will, under the general control of the Vice-Chairman, exercise all powers necessary for the recovery by coercive process of rates or bills due to the Corporation.

He will more especially exercise the statutory powers conferred on the 'Commissioners' by the following sections:—
Section 121.—Recover rates by distress and sale.
Section 142.—Cause to be served Notices of Demand, issue Distress Warrants, release property (with consent of Chairman or Vice-Chairman) left for repairs or safe custody.
Section 144.—Discharge or suspend warrant, sell moveable property, and return surplus.
Section 146.—With approval of Chairman or Vice-Chairman, demand amount from occupier.
Section 180.—Recover sum due.
Section 351.—Recover rents, tolls and fees.
Section 393.—Enter upon house or land.
Section 440.—Recover sum due.
Section 451.— Ditto.

License Officer.

License Officer.

The License Officer will, under the general control of the Vice-Chairman, supervise the levy of the taxes on carriages and animals, on proessions trades and callings, and on the registration of carts; also the licensing of hackney carriages and the recovery of trade refuse fees and of fees for the licensing of stables and cow-sheds.

He will more especially exercise the statutory powers conferred on 'the Commissioners' by the following sections:—
Section 78.—Refund or remission of a part of tax with consent of Chairman or Vice-Chairman.
Section 79.—License to keep carriages and animals.
Section 81.—With approval of Chairman or Vice-Chairman, compounding for tax.
Section 83.—Issue of notice to produce books.
Section 84.—Issue of order to enter and inspect stable or coach-house.
Section 86.—Prepare Office-book.
Section 87.—Remit or refund portion of tax (with consent of Chairman or Vice-Chairman), and reduce from higher to lower class, or exempt.
Section 88.—Grant licenses.
Section 91.—Issue notice in writing.
Section 93.—Prepare list.
Section 94.—Register carts and prescribe numbers.
Section 96.—Appoint days and remit portion of fees.
Section 98.—Seize carts and animals, and apply to police.
Second Schedule (7) (*b*).—Pass orders on application.
(7) (*c*).—Issue notice.
(7) (*d*).—Issue notice.
(9) Grant licenses.
Section 431.—Grant authority to inspect license given by his orders.

J. G. RITCHIE,
Chairman.

The 15th May 1895.

APPENDIX IV—J.

No. 345, dated Calcutta, the 23rd February 1897.

From—W. B. GWYTHER, Esq., Secretary to the Medical Board,
To—The Chairman of the Corporation of Calcutta.

I AM directed to acknowledge the receipt of your letter No. 6492, dated the 1st instant, to the address of the Secretary to the Government of Bengal in the Municipal Department, in which you report the replies which have been given by a sub-committee of Municipal Commissioners on certain of the points raised by the Medical Board in regard to the sanitary condition of Calcutta, and to say that these matters have been further considered by the Board, who desire me to write to you upon each of the heads detailed in your letter, as follows:—

(*a*) *Overcrowded and badly built houses.*—It is stated that the procedure under the Municipal Act for dealing with questions of this class is not of a summary nature, and that when legal proceedings are taken there is delay in obtaining orders from the Court. The Board wish to know whether summary powers should be given under the Epidemic Diseases Act, 1897, in order to make sections 318, 319 and 320 of the Calcutta Municipal Act effective.

(*b*) *Defects of public latrines*—In regard to this question, it is stated that these defects will be remedied as soon as the unfiltered water-supply is increased, and that new latrines and urinals are being built The Medical Board desire to have a detailed report of progress in respect to these, and to know whether any special powers are required by the Corporation in order to push on with improvements.

(*c*) *Defects of private latrines.*—The sub-committee remark that notices will be served upon the owners of houses in which there are bad privies as soon as the unfiltered water-supply is increased, with a view to such privies being connected with the sewers. The Medical Board understand, however, that there are many privies which might now be connected, and wish to point out that where there is a water-supply all such privies should, under section 286, be connected. The Board are informed that the permanent staff of sweepers for private privies is insufficient, and request that they may be informed at once what is being done in the matter. They also desire to be informed if any special powers are wanted under the Epidemic Diseases Act to deal with these latrines.

(*d*) *State of house drains and drain pipes.*—With reference to paragraph 10 of the Chief Engineer's note forming an enclosure to your letter, you are requested to state whether more powers are needed, particularly in relation to the plumbers.

(*e*) *State of surface drains.*—The Medical Board suggest that in order to put a stop to surface drains being obstructed or becoming a nuisance, sections 287 and 385 of the Municipal Act should be vigorously worked, and the Corporation should do whatever is necessary to remedy matters themselves and recover the cost from the owners.

(*f*) *Neglect of road scavenging.*—In regard to the doubts expressed by the sub-committee as to whether the watering of roads with a solution of perchloride of mercury will minimize the pollution of the soil, the Medical Board have received a special note, copy of which is enclosed, on the subject from Dr. Cunningham, in which the objections that have been raised are met, and it is shown that the solution is likely to be beneficial and is worth being tried. The Board consider that the use of this solution should at once be ordered in selected areas, among which should be Wellesley Place, Old Court House Street, and Chowringhee, and its effects noted for a month. A formula for preparing the solution is appended.

(*g*) *State of compounds and courtyards.*—In respect of this subject, the Medical Board are convinced that the cleaning of compounds and court-yards requires to be most vigorously carried out, and although it is stated that a special establishment has been allotted for Wards Nos. 5 and 7, which are admitted to be in a bad condition in this respect, the Board feel that this step is in itself insufficient, unless the Corporation make certain that the full staff is actually employed and that their work is efficiently supervised. It is understood that the extra establishment, for which a sum of Rs. 30,000 was recently sanctioned, was intended to consist of—

1,500 coolies,
323 carts,

besides supervising establishment, but the Board have received information that only about

875 coolies and
190 carts,

with a supervising staff, are actually employed at present, and they regard this staff as altogether insufficient for temporary cleansing. The Medical Board consider it imperatively necessary that the numbers of this additional staff should be at once brought up to the strength, for which Rs. 30,000 was sanctioned, all vacancies in it caused by sickness and leave being filled up, and that some of the other wards, which are very little better than the two wards above referred to, should be attended to forthwith. It is also essential that the supervising staff should live in or near the wards where they work, and that cleansing operations should not be confined to the morning hours, but be carried on during the afternoon also, the pay of the coolies being revised accordingly, if necessary.

(*h*) *Pollution of wells.*—The sub-committee note that the filling up of wells will be proceeded with as soon as the water in them has been analysed and the increased supply of

unfiltered water is provided. The Medical Board understand that in many cases wells unfit for use can be filled up without hardship; and in such cases the filling up should be taken in hand at once. The testing of the water of other wells should be carried out without delay, and orders given for the immediate filling up of wells that are a source of danger.

(*i*) *State of cowsheds and stables.*—It is notorious that these places are greatly in need of improvement and are at present a source of both danger and annoyance to the inhabitants of this city. Although there are some difficulties in the way of carrying out sanitary changes in these sheds and stables, the Medical Board look upon it as important that vigorous action should be taken under section 307, and that the conservancy staff should be sufficiently increased to make this section effective.

(*j*) *Hackney carriage stands.*—It appears to the Medical Board that stands for hackney carriages should be constructed on better sanitary principles than have been followed in many cases, and it would be as well to lay down a standard plan for these. You should submit a plan for the purpose, accompanied by a statement of hackney carriage stands proposed to be improved or constructed, showing in what order the Corporation intend taking them in hand.

(*k*) *Condition of bustis.*—The question of the improvement of bustis has always been a serious one in Calcutta, and though in some localities the condition of these insanitary areas has been altered for the better, there still remains a vast extent of space in the town that cannot be left untouched, and that is a menace unless cleaned and put in order. Knowing how readily epidemics are spread, and how deeply they take root in busti areas, the Medical Board are anxious to know what special action the Corporation propose or consider it desirable to take to prevent an outbreak of plague in them, and whether you require special powers, or can do what is necessary under the ordinary law. In this connection it would be useful to have a list of bustis, with the names of their owners and the sanitary defects in each, and you should take steps to have this list prepared, forwarding a copy for the information of the Medical Board.

(*l*) *Disposal of house-refuse.*—In order that house refuse may be collected and removed at regular hours, and the streets kept free from unsightly heaps during the day, it should be laid down that house-refuse must be thrown out between the hours of 9 P.M. and 7 A.M. and at no other hours.

2. With reference to the question of overcrowding, the Medical Board cannot admit that the importance of this evil is at all minimized, because during certain periods of the year a proportion of the inhabitants sleep in verandahs and open places. It is essential that some limit should be placed upon the number who may live upon each cottah of land, and it is necessary to point out that, owing to the want of such regulations, certain quarters of the town contain more persons per unit of space than is healthful to them, and are a standing menace to the city and to their neighbours. Houses in these quarters have thus acquired a fictitious value which is not justified by the situation, accessibility, or sanitary condition of those areas. You should have this aspect of the case carefully looked into and state what further powers are required in order to abate the overcrowding, and what cubic capacity and superficial area should be laid down as a minimum for individual tenements.

Note by BRIG.-SURGN.-LIEUT.-COL. D. D. CUNNINGHAM, F.R.S., C.I.E.

THE following points in the Health Officer's remarks on the suggestion of the Medical Board, that dilute solutions of corrosive sublimate ought to be used as a means of attempting to purify the soil of the streets of Calcutta from the masses of filth which have accumulated in them, as the result of the neglect of surface cleaning, appear to me to be noteworthy: —

1. He apparently denies that the soil is polluted, and subsequently, as an objection to the use of corrosive sublimate, maintains "that the roads and lanes of Calcutta are alkaline, on account of the dung and urine of animals."
2. He affirms that the opinion of the Board, that cases of tetanus were traceable to people falling and cutting themselves on the streets, "is altogether unsupported by facts." I believe that more than one member of the Board will confirm me in saying that a well known example of such a case occurred among the European community only a few years ago, and, although most of the cases of tetanus occurring in Calcutta may be among infants, there can, I believe, be no question of an abnormal prevalence of the disease in the town, which presumably, whether the disease affect infants or adults, implies a correspondingly abnormal prevalence of the tetanus bacillus. Moreover, I am informed by Dr. Gibbons that, in his experience, cases such as those alluded to by the Board occur by no means uncommonly, and by Dr. Leahy, that in his belief the prevalence of infantile and puerperal tetanus ought properly to be ascribed, not to the use of pieces of bamboo, but to infection from the hands of *dais*, which are constantly liable to be contaminated with the earth, which is ordinarily employed in cleaning *lotas* and other metallic vessels.
3. He denies that the streets are likely to form a favorable *nidus* for the tetanus bacillus, and at the same time affirms that they "occur in most stables, and probably on the maidan, and *certainly* on the racecourse." But his certainty with regard to the racecourse can only be interpreted as indicating a belief that it is a specially favorable site, because of the amount of horse dung which is present in the soil, and subsequently he points out that the soil of

the streets is alkaline from the amount of the dung and urine of animals, of which a very large number must certainly be horses.

4. Finally, he affirms that the use of solution of corrosive sublimate would be impracticable and dangerous. As to the question of impracticability, I cannot speak with authority; but probably it might really be a matter of difficulty to introduce the measure in the limited number of large thoroughfares which are watered direct from the mains by hose. In all those which are not, however, I do not see any reason why it should be impossible to do so, and it is exactly in the narrow roads and lanes that there would seem to be the greatest need of the procedure, seeing that it is precisely in them that free ventilation and exposure to sunshine are most likely to be absent.

In the passage dealing with the question of the danger of adopting the suggestion of the Board, he first states that corrosive sublimate would be useless, because it would be decomposed by the soil, and second, that it would at the same time be a source of danger, because it would become a constituent of street dust. In regard to the first of these dicta, it is only necessary to point out that it was not proposed to mix the germicide with any alkaline medium before applying it, and that the fact that it constitutes one of the most efficacious and widely employed antiseptic applications in the treatment of wounds, is sufficient to show that it is not deprived of germicidal properties on coming in contact with alkaline materials—the blood, *liquor sanguinis*, lymph, serum, muscle, and all the other tissues in wounds are more or less alkaline. No doubt the alkalinity of the street soil would weaken the power of the sublimate as a germicide, but this does not show that it would be endowed with such an elective affinity for the alkaline constituents of the soil, that it would leave the germs entirely alone. As a matter of practical experience, I can, moreover, affirm that solutions of corrosive sublimate are, even as deodorants, much more efficacious than phenyle, the deodorant effect lasting considerably longer, and not being complicated by any process of concealing one odour by another. It has been found that, in dealing with the specially offensive drainage coming from the Carnivora house in the Zoological Garden, the deodorant effect of treatment with corrosive sublimate lasts at least 24 hours longer than when phenyle is employed.

The positive dangers that are alleged to be inherent in the scheme are the following:—(1) That children would drink the water; (2) that the solution would be dangerous in the hands of ignorant coolies; (3) that the street-dust would be likely to become toxic.

That children may occasionally run after water-carts and splash about or even drink a little of the water is doubtless the case, but the phenomenon, in so far as I am aware, is not at all a common one, and it surely would be very easy to prevent such an occurrence. But, even if a child occasionally did drink a little of the water, I do not apprehend that any serious effects would ensue. As far as I can see, each half ounce of water would contain about $\frac{1}{25}$ of a grain of corrosive sublimate (suppose that the reagent retained its full strength and had not lost any of it by acting as a germicide in the water), and it is extremely unlikely that on any one occasion a child would drink more than half an ounce of the fluid or would become so habitual a drinker of it as to give rise to chronic mercurial poisoning. There would only be one chance a week of obtaining the beverage, and there is no reason to believe that this chance would be specially watched for. As to danger to ignorant coolies, we have never had any experience of any evil effects following the habitual use of very much stronger solutions of the reagent in the Zoo, and, on the contrary, all the servants have become so convinced of its beneficent action in case of wounds that we have frequent applicants for treatment by it. In any case it surely would be easy enough to prevent coolies from drinking the water. The most ignorant coolies are constantly employed in handling dangerous reagents, and accidents are of extremely rare occurrence. Common coolies are constantly handling large masses of crude arsenic in the hide godowns, but cases of accidental arsenical poisoning are quite exceptional among them, however common they may be among the outside population.

As to the dust question, seeing that the streets are constantly watered and would only be watered once a week with sublimate solution, there could be no chance whatever of any surface accumulation of the dry reagent. Every sheet in the herbarium at the Botanical Garden is so saturated with strong solutions of corrosive sublimate, that the reagent forms a visible efflorescence on the surface of the specimen. Numbers of sheets are constantly lying exposed and being taken in and out of their cabinets, and yet no cases of mercurial poisoning have ever occurred among those who are constantly working all day in the building. It is very unlikely that infinitesimally small quantities applied only once a week to the streets could constitute any appreciable source of danger.

In conclusion, I maintain that even were there some appreciable risk in the experiment, it would still be a perfectly justifiable one. Years of neglected street conservancy have saturated the street-soil with filth to such an extent that, even were no more filth to be added, it would necessarily be a matter of many years ere it would revert to a normal condition. It is impossible to remove this polluted soil from its site, and therefore, even did some risk attend an attempt to accelerate its purification and prevent additional deterioration, it might surely be regarded as a minor evil.

Formula for preparing solution of perchloride of Mercury for road-watering purposes.

Corrosive Sublimate	...	...	...	1 ounce.
Acid Hydrochloric	...	...	...	10 ounces.
Water ...	...	...	...	30 gallons.

Equal to 1 in 5,000.

APPENDIX IV—K.

No. 429, dated Calcutta, the 10th March 1897.

From—W. B. GWYTHER, Esq., Secretary to the Medical Board,
To—The Chairman of the Corporation of Calcutta.

IN continuation of this office letter No. 345, dated the 23rd ultimo, in regard to the sanitary condition of Calcutta, I am directed to request that you will be so good as to favour the Medical Board with an expression of your personal views as head of the Municipal Executive, on the various points raised therein. I am also desired to ask whether a Magistrate should not be appointed for the trial of municipal cases under section 422 of the Calcutta Municipal Consolidation Act II of 1888.

APPENDIX IV.—L.

No. 7732, dated Calcutta, the 25th March 1897.

From—H. C. WILLIAMS, Esq., Chairman of the Corporation of Calcutta,
To—The Secretary to the Medical Board.

WITH reference to your letters Nos. 345 and 429, of the 23rd February and 10th March 1897, respectively, relating to the sanitary condition of Calcutta, I have the honour to report that, after consulting the Health Officer and the Engineer on the various points raised in the letters, I am of opinion that the following changes in the procedure at present existing are required—

(*a*) *Overcrouded and badly built houses.*—There is but little doubt that at times, when serious epidemic threatens, the present mode of procedure is too dilatory. According to the Health Officer, it at present takes some two months before a house can be closed under section 319, and, without endorsing the Health Officer's views that it would be advisable for such procedure to be adopted on the mere *ipse dixit* of the Health Officer and the Engineer, I certainly think that more prompt action is required than that which is possible under the present system by which cases are tried. Personally, I am very strongly of opinion that a Special Magistrate should be appointed under section 422 of Act II. At present cases of all kinds generally drag on for an interminable time, owing to pressure of work on the Magistrate. The result naturally is that the accused frequently absent themselves and are never traced, and the proceedings are often a simple waste of time. Our subordinate officers spend far too great a portion of their time hanging about the courts. With a special Magistrate this would be to a very great extent avoided, cases would be promptly decided, and the public in general would gain. The punishments awarded are at present often ludicrously inadequate to the offence, and offenders continue to defy the law with impunity, knowing that with ordinary luck they will generally suffer but a nominal punishment. As an example of a few out of many cases, I forward herewith the copy of one list of cases submitted to me for information. Personally, I consider no time should be lost in appointing a Special Magistrate, but if the appointment cannot be made at once, I think that orders should issue to the Presidency Magistrate for the prompt disposal of all cases under sections 319 and 320 of the Act. As regards 320, the Health Officer would like the Police to be given power to enter houses to see whether they are overcrowded or not. I fear I cannot support this request, especially at a time when, by the appointment of twelve additional Medical Inspectors, the Health Department has a special organization for enquiring into these matters; but I should like to take this opportunity of putting on record my views that when the Municipal Act is next amended the opportunity be taken of inserting into it a proviso like that embodied in section 522 of the Bombay Act, to the effect that when required the Police should give assistance to the Municipal authorities. As long as the Chairman in Calcutta was the head of the Police there was no need of this section, but now the Municipal subordinates find it often impossible to carry out orders, because they have no power at hand to carry them out with. It is especially in the question of demolishment of buildings improperly built that this difficulty is continually met with.

(*b*) *Defects of public latrines.*—As regards (*b*), I do not think that any special powers are required. The Commissioners generally are fully aware of the defects of the public latrine system, and are anxious to improve matters by starting more latrines; but there is naturally a difficulty about selecting suitable sites, and the scarcity of money is a stumbling-block to rapid progress in this matter. The Engineer is of opinion that a public latrine and pail depôt is required in every *busti*, and that the cost of it should be recovered from the *busti* owners by a special rate. There are at present only 40 pail depôts in the town. This number is far too small, and in consequence of this the constant stream of sweepers carrying buckets to and from them renders their neighbourhood most offensive, especially in the early morning. It certainly would be desirable if each *busti* were to have a public latrine of its

own, but when each hut is forced to have a private one, it would be a hardship to force the owner to pay for a public latrine as well. I think a pail depôt should be a necessary part of each *busti*.

(*c*) As regards private latrines, the present procedure is necessarily of a dilatory nature. I do not, however, think that at present any special powers under section 286 are required, although possibly a special establishment to demolish and construct would be of use. It would, however, be expensive, as it is often impossible to recover the money.

(*d*) As regards the question of house drains and drain-pipes, I do not think that any more powers are at present needed than those I have already alluded to, namely, the appointment of a permanent Magistrate, and a section directing the Police to help the Municipal servants when needed. At present they have considerable difficulty in carrying out orders owing to abuse as well as actual interference.

(*e*) *State of surface drains.*—As regards section 385, with the present system under which cases are tried, it is impossible to work this section vigorously. With regard to section 287, I think that it should be made compulsory on the occupier to remove obstructions from his drains at once without any notice being issued. Licensed plumbers should be employed for this purpose.

2. The questions raised in paragraph 2 of your letter under reply will, it is to be hoped, shortly be taken up by the Building Commission, which, it is believed, will be shortly appointed, and it therefore appears unnecessary to discuss them here.

APPENDIX IV—M.

No. 727, dated Calcutta, the 8th May 1897.

From—H. C. WILLIAMS, Esq., C.S., Chairman of the Corporation of Calcutta,
To—The Secretary to the Medical Board, Calcutta.

WITH reference to your letter No. 345 of 23rd February, on the subject of the sanitary condition of Calcutta, which, owing to the heavy demands on the time of the Commissioners caused by the Budget and other Committees, could not be considered by the Sub-Committee appointed for the purpose before the 6th instant, I have the honour to set forth hereunder the views of the Commissioners as regards the various matters referred to in the said letter :—

(*a*) *Overcrowded and badly built houses.*—The Commissioners are of opinion that until Plague actually appears there is no need for summary powers being given under the Epidemic Diseases Act, 1897, but they consider that Government should direct the Chief Presidency Magistrate to make arrangements for the more speedy disposal of cases, and that if cases cannot be promptly disposed of, as a last resource should appoint a Special Magistrate for the purpose.

(*b*) *Defects of public latrines.*—The Commissioners are again of opinion that no special powers are needed to push on with improvement. There are 48 free public latrines at present in the town, and orders have been issued for putting them into thorough repair. A new latrine is being built at Baug Bazar, and another has been sanctioned at the new *Dhobikhana*. Others will be provided, where possible; but the Commissioners would point out that *pardanishin* ladies altogether object to the use of public latrines, and that as regards *bastis* there is no need of them, as even there each hut has to be provided with a latrine of its own. The Chief Engineer estimates that 700 urinals are needed throughout the town, and as he puts the cost at Rs. 500 each, that item alone would involve an expenditure of Rs. 3,50,000.

(*c*) *Defects of private latrines.*—With reference to the remarks in this paragraph the Commissioners desire me to point out that in some places it is impossible to connect privies, although water connection is available, because of the insufficient pressure obtainable. They are as anxious as the Medical Board to see such privies connected, but it has been hitherto found impossible.

I quote herewith the following remarks of the Engineer on the subject :—

"For some years it has been necessary to refuse privy connection owing to the want of unfiltered water for flushing purposes. Early in 1896-97 the Executive sanctioned a new Pumping Station at Mullick's Ghât which, it is expected, will answer all possible requirements of the city for all times. The engine will be erected on a new mode and parts of them have been raised."

"The unfiltered water-pipes are being laid down in all parts of the town, and it is hoped that this obstacle to further progress will shortly be removed.

I have also to point out that the estimates for supplying the town area alone with unfiltered water amounts to Rs. 13,98,000.

2. The question about increasing the permanent staff of sweepers will come up before the Commissioners in a few days. No special powers are needed on these subjects.

(*d*) *State of House-drains and Drain-pipes.*—The Commissioners do not consider more powers needed. The remarks under paragraph (*a*) would also apply to this paragraph.

(*e*) *State of Surface-drains.*—The Commissioners are anxious to see these sections worked vigorously, but in their opinion the remedy does not lie with them.

(*f*) *Neglect of Road Scavenging.*—The suggestions made by the Medical Board have been carried out, and a report is due from the Engineer and Health Officer, but the Commissioners think it would have been much better had the experiment been tried in crowded streets like those in Jorabagan and Burra Bazar.

(*g*) *State of Compounds and Court-yards.*—With regard to the remarks in this paragraph the Commissioners would point out that it is not apparent whence the Board got its information about the number of coolies, etc., employed, but from the Health Officer's report, dated 15th March, it appears that on that day 1,588 men were on the roll, of whom 1,317 were present at work, and also 329 carts. The whole of the sum allotted has now been spent. As regards the question of the supervising staff living in or near the wards where they work the Commissioners fully agree with the remarks of the Medical Board; but they would point out that the cost of providing quarters is very expensive, and that when the duties of officers are constantly changed it is impossible for them to constantly move their quarters. It is also out of the question for persons holding temporary appointments to reside just where their work is done. The Commissioners would like to see quarters supplied to all their establishments, as that would ensure better discipline, etc., but the cost is prohibitive. The question of afternoon service is an old one, and as regards permanent establishment is again being reconsidered. It was found impossible to get the temporary establishment to work in the afternoon.

(*h*) *Pollution of wells.*—The wells are being filled up as fast as possible.

(*i*) *State of cowsheds and stables.*—This question has long occupied the attention of the Commissioners and revised bye-laws on certain points are being submitted to Government for approval. It is satisfactory to note that there has been considerable improvement in the state of many of the cow-sheds, especially in the eastern part of the town.

(*j*) *Hackney Carriage Stands.*—The Engineer has been directed to submit a standard plan of a hackney carriage stand. Improvements are being made and at the present time three new stands are in course of construction.

(*k*) *Condition of Bastis.*—The Commissioners are fully aware of the importance of this subject, and plans for improvements are constantly before them: they would refer to the Harrison Road as an instance of their desire to improve the *bastis*, and would also mention that during each of the last three years they have spent the following amounts under this head:—

A list of the *bastis* in the town will follow.

Expenditure of Basti Improvements—

		Rs.	As.	P.
During 1893-94	...	38,061	6	9
„ 1894-95	...	32,792	6	5*
„ 1895-96	...	21,042	14	0
Total	...	91,896	11	2†

(*l*) *Disposal of house-refuse.*—The Commissioners fear it is impossible to adopt the suggestions made in this paragraph. Throwing out house-refuse at all hours has been for many years a much debated question, and the restriction of it to the hours named is opposed to the habits of the people. They also are not disposed to accept the suggestions of keeping the refuse in receptacles prepared for the purpose.

3. The consideration of the questions raised in this paragraph seems to belong rather to the functions of the Buildings Commission which has now commenced its sittings.

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* These sums do not include the amounts spent out of Revenue for cleansing bastis. They are as follows:—

	Rs.
1893-94	1,02,430
1894-95	97,971
1895-96	98,261

† This includes Rs. 23,075-4-11 spent for *Improvement of Government basti at Hastings*, for which Government grant of Rs. 30,575-5-3 was received in 1894-95.

APPENDIX V.

SANITATION OF HOWRAH.

APPENDIX V.

REPORT ON THE SANITATION OF HOWRAH.

Dated Howrah, the 5th February 1897.

From—H. F. T. MAGUIRE, Esq., I.C.S., District Magistrate, Howrah,
To—The Secretary to the Medical Board.

I HAVE the honour to forward a copy of the report prepared by Surgeon-Lieutenant-Colonel R. D. Murray on the sanitary condition of Howrah as directed in your letter No. 135 of the 12th December. The report is a complete one, and I can confirm most of the facts in it from personal observation.

2. It will be observed that while Surgeon-Major Walsh very strongly condemned the present system of trenching night-soil, Surgeon-Lieutenant-Colonel Murray on the whole approves of it. It has also met with the general approval of the Sanitary Commissioner. It may therefore be thought unnecessary to alter this.

3. In other points the two Medical Officers have generally agreed. The most important points are the overcrowding of bastis, the proper cleansing of latrines and cesspools and the necessity of a proper system of drainage and sewage.

4. The Municipal law about the sanitation of bastis is very difficult to work. While section 243 gives power to impose certain restrictions on the builders of huts, these restrictions do not seem to apply to one hut, nor is there any power to refuse to allow huts to be built, though they can be pulled down, if they are not in accordance with orders. The law about permission to build houses not being huts is also not so clear as could be wished. Under section 237(1) the Commissioners may refuse to sanction a building or may sanction it either absolutely or subject to any written directions which the Commissioners may deem fit to issue in accordance with the rules, if any, framed under section 241. Now section 241 cannot take effect in a municipality until it has been specially extended by the Local Government at the request of the Commissioners at a meeting. And the Commissioners of the Howrah Municipality have refused to make this request. Therefore, as matters at present stand, the power of the Commissioners is limited to either refusing or allowing a building. In most cases buildings might be allowed with some alterations, but this cannot now be legally done. I understand that a Building Act is being prepared for Calcutta, and a similar Act should be passed for Howrah. It appears to me to be unnecessary to have a separate law for huts and houses. It is questionable at present what a hut is and, if the distinction between a hut and a house is to be maintained, a clear definition is needed.

5. The questions raised in the preceding paragraph are, however, connected with future buildings in the Municipality. It is still more important that some remedy should be provided for the present bastis. And for these it is not enough that some huts should be removed, some roads, drains and sewers constructed and so on as provided in section 245 of the Act. Many of the bastis ought to be pulled down and entirely rebuilt. For this purpose the provisions of sections 252 and following of the Calcutta Municipal Act or some similar provisions ought to be introduced.

6. A great deal has been done lately to remove the more insanitary of the private latrines. Much, as can be seen from Surgeon-Lieutenant-Colonel Murray's report, still remains to be done. But this cannot be done until some general scheme for making more public latrines shall have been prepared. And this is delayed partly by the want of funds and partly because the sites for such public latrines must necessarily be considered in connection with the unsettled drainage and sewage scheme. It may be noted that in sanctioning new privies the suggestions of the Civil Surgeon have for some time been practically followed. At present, however, they cannot be cleaned twice a day, as the establishment is not sufficient. The question of the cleansing of cesspools is also delayed on account of the drainage scheme. Much has recently be done towards cleansing both private latrines and cesspools. But the only present means of cleansing cesspools is by baling, and the result is always that there is some residuum. The Chairman of the Municipality is trying to arrange for small pumps to be attached to the sullage carts. But it is obvious that the only complete solution of the difficulty is a sewage system. It is also necessary to fill up small tanks and excavations, but this is a long business and will have to be done gradually.

7. As to drainage and sewage, a revised scheme has recently been submitted to the Sanitary Board. As there is only one set of plans, I would suggest that, if the Medical Board wish to consider this question, they may do so in consultation with the former Board.

8. In carrying out all these schemes for improving the condition of the Town the chief difficulty is want of money. The collections of rates have been far from satisfactory for some years, and there has been a gradually increasing floating debt which did not appear in the budget and caused much confusion in the accounts. The collections in the present year have somewhat improved, and, as an earnest attempt is now being made to clear off ar rears of many former years, which have been allowed to encumber the accounts, it is hoped that better results will follow. At the same time, the Municipality have had to spend about Rs. 15,000 on account of cleaning the town when the plague was expected, and they have still to employ an extra staff, for the present, at least, at a cost of nearly Rs. 1,500 per month. This expenditure has not been provided for in the Budget, and the Budget as framed showed a deficit of about Rs. 11,000. It has been proposed in order to supply

present funds to spend a sinking fund which has been provided to repay a sum of Rs. 50,000 which was borrowed in 1886 to make the Conservancy Tram line. This sinking fund now amounts to Rs. 27,000. It has also been proposed to take over the management of the Provident Fund, which would give a sum of about Rs. 7,500. If these proposals be not sanctioned, I do not see how money can be obtained. But even these proposals will only meet the present difficulty. In order to maintain the cleanliness which has now been achieved in the town, an extra establishment is necessary, which is estimated to cost annually Rs. 44,136 more than that hitherto employed. As there is just going to be a general election, it is not to be expected that the Commissioners will vote any increase in taxation. And no increase will be necessary if proposals which have been made to allow persons as well as holdings to be taxed in the same Wards and to allow the Municipality to borrow on the same terms as the Calcutta Municipality are allowed by Chapter XIV of their Act are adopted. I hope therefore that these proposals will be sanctioned. I refer to them here, as it would be useless to make recommendations without making financial provision for them.

9. In the concluding part of your letter you remark that the Municipal Act is deficient in provisions for dealing with epidemic diseases. It is curious that such provisions should have been omitted. The 'Epidemic Diseases Bill' now before the Indian Council will provide such provisions. But this appears to be intended for exceptional use, and may perhaps not be thought to apply to such well-known epidemic diseases as cholera and small-pox, yet, if the figures of years be taken, cholera and small-pox have been much more deadly than plague. In Howrah at least some such provisions as those contained in sections 321 to 334 of the Calcutta Municipal Act are essential.

10. To recapitulate—the chief sanitary needs of Howrah are a drainage and sewage system, the due cleansing of latrines and cesspools and the filling up of tanks. To satisfy these, funds must be provided, and these can be provided by an alteration in the terms on which the Municipality is permitted to borrow. I may say that so long as it is possible for the Municipality to be financed by any arrangement of this sort, the Commissioners would be wrong to allow their already very high rates to be enhanced. Further legislation is required in the shape of provisions for taxing coolies, for regulating buildings, for pulling down and rebuilding bastis and for dealing with infectious diseases.

11. I am writing this letter as Magistrate. A copy of the Civil Surgeon's report and of this letter will be sent to the Municipality for such remarks as they may wish to make.

Dated Howrah, the 25th January 1897.

From—Surgn.-Lieut.-Col. R. D. Murray, Civil Surgeon, Howrah,
To—The Magistrate of Howrah.

With reference to your No. 375M., dated the 16th December, forwarding copy of letter No. 135, dated the 12th December, from the Secretary to the Medical Board, Bengal, I have the honour to submit the following report on the sanitary condition and sanitary requirements of Howrah.

I. Overcrowding.

The town of Howrah is about 7 miles long and has an average width of about 1¼ miles. It has an area of about 8¼ square miles divided into 10 wards, and a population of 116,606. The density of the population is about 14,000 per square mile, or an average of 22 persons per acre. The density varies from 42,251 per square mile in Ward V to 5,088 per square mile in Ward X. The city of London has an average population of 35,905 to the square mile, while the average in Calcutta is 69,000, varying from 144,640 in Ward VIII to 17,290 in Ward XII. The following table shows the Howrah density in the different wards:—

Wards.	Populations.	Area in acres.	Density of population per acre.	Density of population per square mile.
1	2	3	4	5
I ...	11,761	421·62	27·19	17,849·6
II ...	5,631	522·13	10·78	6,899·2
III ...	8,756	172·65	50·70	32,448·0
IV ...	15,370	355·64	43·21	27,654·4
V ...	19,804	299·91	66·03	42,259·2
VI ...	14,034	765·64	18·33	11,731·2
VII ...	13,427	299·46	44·83	28,691·2
VIII ...	15,016	698·71	21·49	13,753·6
IX ...	6,684	1,094·63	6·10	3,904·0
X ...	6,123	769·30	7·95	5,088·0
Total ...	116,606	53,996·9	Average of nearly 22 persons per acre.	Average 14,080

There is therefore no overcrowding in Howrah taking the town as a whole, although in certain bastis in Wards III, IV, V and VII the population is in excess of a safe health limit. I understand that the East Indian Railway propose taking up a large area in Ward IV as a site for a new railway station, extending their existing premises to the north. If they carry out this project, one of the most crowded and most insanitary portions of the town will be got rid of, and a great improvement to the health and general appearance of the town will be effected.

There can be no doubt that the plague spots of Howrah are the bastis. They are overcrowded, badly ventilated, sewage-soaked and most insanitary generally. Bangal Babu Bazar, Arkati Bazar, Satbigha Basti, and Tikapara may be mentioned as specially requiring attention. I would recommend the introduction of the Act for the proper regulation of Bastis so as to be able to deal with them thoroughly. The basti lanes should be widened so as to permit of more ventilation and to facilitate cleansing operations. At present they are very foul.

II. Public latrines.

There are 21 latrines in the town with a total of only 249 seats and 14 urinals. For a population of 116,606, this, I need not say, is quite inadequate. They are on the whole well kept and are a striking contrast to the disgusting private latrines often to be seen in their immediate vicinity.

Their number is, however, much too few, and I would strongly recommend that a number of new iron ones on the most approved modern principles be at once constructed. At least 20 more with 12 seats each are required, and I would begin by supplying Tikapara, Bangal Babu Bazar and Satbigha Basti with two each.

The urinals also should be increased. The existing number might be trebled.

III. Private latrines.

These abound all over the town and present every variety of type, from the pucka drop privy in the houses of the better classes to the kutcha bamboo and mat arrangement prevalent in the bastis. The latter are as often as not in a dilapidated condition, and insufficiently screened from the public view. In Tikapara they are so thick that you can see one at every turn, and as they are all without exception entirely neglected by the Conservancy establishment, the condition of the place can be better imagined than described. The place is one huge cesspit. One cannot conceive anything more inconsistent with health—I might say with life—than the condition it presented on the morning of my recent inspection. It turned me quite sick, and I was glad to get back again to the main Dores' Road, which, though a terrible slum, was a veritable paradise to the interior of the basti.

The receptacles for solid and liquid excreta consist of a single earthenware unglazed *gumlah*, either resting on, or sunk into, the ground. These *gumlahs* are sometimes so small that they rapidly overflow, and sometimes so large that they are never properly emptied, while those which are sunk in the ground are generally broken and rotten, and the filth that does not soak into the ground has to be removed by dippers. As a consequence the earth (*sic*) becomes literally sodden with excrement, the fluid part of which oozes out and flows into cesspools, drains, lanes, and tanks.

As regards the private latrines in the pucka houses of the well-to-do, the usual plan is to have a seat about 3 feet from the ground with a *gumlah* chamber below for the reception of the nightsoil. This chamber is usually of brickwork, but not plastered like the seat and seat aperture. The *gumlah* rests in most cases on the bare ground. In two-storied houses, which usually have an upstairs privy for the females, the drop from the seat to the *gumlah* is very considerable, so that you have a long shaft or funnel which cannot be cleaned, and is permanently coated with excrement. The stench from these places is naturally rather overpowering. The *gumlah* chamber at the bottom is often too small and dark to permit of due cleansing, and the entrance to the chamber is not large enough to allow the *gumlah* to be bodily removed, so dippers have to be resorted to for emptying out the contents, and a residue always remains.

There is a third variety of privy very common. It consists of a small semi-detached pucka building connected either with the residence directly or at some distance from it as an abutment from the compound wall. These privies have one or two seats with the usual aperture, and a *gumlah* chamber below opening on to the road and provided with a small wooden door or shutter by which the mehter gets access for cleaning purposes.

It is estimated that there are now about 26,000 private latrines in Howrah with 520 mehters to clean them, or 1 to every 50 latrines. They are only cleaned or rather supposed to be cleaned once a day. I believe once a week is nearer the mark in many cases, and indeed never at all in Tikapara. They should be cleaned twice a day, as it is customary for people to resort to them morning and evening.

The position of these latrines is often most objectionable. They are frequently built on the edge of tanks into which their overflow discharges, and in the water of which people joyfully bathe, wash their clothes and cooking utensils, and *even their rice*. Some of the latrines are partially submerged in these tanks, and yet the people bathe in the water which is nothing short of sewage.

In order to cleanse these multitudinous private privies thoroughly or keep them in even a fair sanitary condition, it is absolutely necessary to still further increase the mehter staff

Quite recently during the plague scare 40 additional men were taken on giving one man to every 50 latrines. That is obviously more than one man can do.

I would recommend that 80 more men be employed bringing the total staff up to 600.

I would also clear away all those innumerable small kutcha latrines in the bastis—make a clean sweep of them—and erect public latrines for the use of the people. The majority of the people are low caste labourers with whom private privies are not a rigid caste necessity. This is particularly true of Tikapara, Bangal Babu Bazar, and Satbigha Basti. Each of these places requires two large public latrines and perhaps the owners of these bastis might be able to assist in their erection. The abolition of these small hut-privies would largely reduce the strain upon the mehter establishment which, even with the proposed increase, can never adequately cleanse the bastis owing to the sodden and polluted state of the latrine sites.

All the conditions which I have described with regard to the dangerously insanitary state of the bastis are of course greatly intensified during the hot weather and rains.

With regard to improving latrines outside crowded bastis I would recommend—

1. That the practice of building privies on the edge of tanks be prohibited.
2. That privies be cleaned twice daily.
3. That their interior be carefully screened from view.
4. The adoption of a standard plan for pucka latrines which will allow of—
   (1) Proper ventilation of the *gumlah* chamber.
   (2) Due facilities for cleansing.
   (3) The substitution of large iron receptacles for earthenware ones.

IV.—Cesspools.

In addition to the privies most houses and groups of houses in Howrah have a cesspool. There are 2,500 (which appears an underestimate) of these, each having an average capacity of 10 cubic feet, so that about 25,000 cubic feet or 156,250 gallons of sullage requires removal every day. In addition to this, there is the ablution water (25,000 gallons) and urine (15,000 gallons) which may be put down roughly at 40,000 gallons. The total comes to 196,250. For the removal of this sewage there are 80 carts or thereabout, each with a capacity of 93 gallons, so that if each cart made three trips a day only 22,320 gallons could be removed, or about $\frac{1}{8}$th of the whole. According to this calculation $\frac{7}{8}$th of the liquid sewage of Howrah is never removed at all, but sinks into the soil, drains into tanks and roadside channels, or disappears by evaporation. The surface pollution therefore is enormous, and this is the crux of the sanitary situation in Howrah. The removal by carts of such a quantity of filth is out of the question. It would take 560 carts and carters to deal with it effectively, an establishment too gigantic for the Municipality with its embarrassed resources to attempt to entertain. The only feasible plan of successfully dealing with the problem is by a well considered system of drainage and sewerage, such as that now being elaborated by Mr. Parry at the request of Government and which has been presented for the approval of the Medical Board. The sewerage scheme proposed by Mr. Parry is for the disposal of nightsoil, urine, and cesspool water, by connecting up the different latrines, urinals and pail depôts by iron pipe-sewers, along which the sewage is to be forced, either by Shone's ejectors, or by hydraulic pumps, to the Belgachhia trenching ground in the north-west of the town, there to be dealt with by precipitation and careful filtration of the effluent. The cost is estimated at Rs. 17,00,000, but as the project is one of imperial concern the outlay will have to be faced. I have gone very carefully into the details of the scheme and feel satisfied that it will answer thoroughly, and that it affords the only solution of this vital and momentous question.

V.—Drainage.

This may be said from a general standpoint to be conspicuous by its absence in Howrah, and until the town is systematically drained it can never be in a sound sanitary condition, especially now that a water-supply has been introduced.

The total length of pucka surface drains is about 3 miles, and of kutcha drains about 80 miles. The town is at present drained partly towards the river, but the greater portion of the drainage flows away from the river towards the low lands in the west, where it is more or less absorbed, and into jhils and tanks. The masonry drains are both rectangular and saucer shaped. Many of them are wrong in principle and design, and not kept in repair, so that much soakage occurs in their course. The rectangular ones are difficult to clean and impurities collect in them. Most of the kutcha drains are mere ditches without proper alignment in which sewage collects and stagnates at intervals forming elongated cesspools. Attempts to cleanse these are futile, as each time, they are deepened by scraping and excavating and the original evil is thereby increased. I may specially instance one large pucka drain in the town which is in reality an open sewer. It begins in Bangal Babu Bazar, Belilios Road, Dores' Road and Tikapara, the copious surface sewage of which abominable places it drains away. The drain passes northwards along the west wall of the Chandmari Bridge, and after pursuing a devious track under the bridge twice and across the railway underground, it opens on the Grand Trunk Road on its west side, in front of the Municipal Market, and constitutes the road side drain as far as the Punjab Railway level crossing. There is again passes underneath the road to re-appear on its east side for a short distance until it disappears into the deep subterraneous drain in King's Road. It now passes straigh to the Salt Golah Ghat, where it discharges its sewage into the river. This ghat is freely

resorted to as a bathing place. I counted as many as 40 persons bathing in the river opposite this sewage effluent, the smell being positively sickening at the spot.

Mr. Parry has also completed a drainage scheme for Howrah in conjunction with the sewerage project. He proposes to drain the town towards the Padmapukur Tala into the river beyond the Botanical Gardens. If the fluid is purified by percolation or filtration before reaching the river through coke breeze, as suggested to me by Dr. Dyson, I do not think there would be any great danger of polluting the Hooghly, which is already defiled to an incredible extent by the sewage from the shipping and the innumerable cargo boats, barges, and native crafts plying on the river.

A counter proposal is to divert the surface drainage towards the sewage-disposal station and have one outfall for both. Mr. Parry thinks there would be no difficulty in this, but, although no Engineer, I do not favour the idea, for it seems to me that, the less fluid we have in connection with the sewage outfall the better, as it enhances the difficulty of dealing with it. I therefore recommend the river outfall with special filtering and purifying arrangements as the best scheme.

The surface drainage of Howrah is greatly defiled by the people living in the bastis, hence the urgent necessity for introducing the Act for their reclamation.

VI.—Water-supply.

The town now enjoys a filtered water-supply. Since February last, when the new water-works were opened, there has been a most remarkable diminution in cholera, so that the benefit to the public health has, as was anticipated, been incalculable. In fact, cholera has well nigh been stamped out. A few cases still occur, chiefly among coolies living and working along the river bank, where there are no stand-posts, and they drink from the river. Stand-posts are too few for the wants of the people generally throughout the town, and they should be increased. In the meantime no delay should take place in erecting a number along the Strand Road where a large amount of labour is employed. House connections have not yet been made, but the matter is engaging the attention of the Commissioners, and I understand a commencement in this very important direction will soon be made.

VII.—Construction of Houses.

I have already alluded to this matter when discussing overcrowding in the town. It is a matter requiring the early attention of the Municipality. There appears to be no plan or order at present, and the result is a number of objectionable bastis where the houses are all huddled together anyhow, leading to overcrowding and squalor, and interfering with ventilation. I have already indicated the worst places.

VIII.—Condition and cleansing of roads.

Since the plague scare a very marked improvement is observable in the general state of the roads. They are kept much cleaner than formerly, and the roadside drains are better attended to.

There are 55 single and 5 double rubbish carts. The refuse of bastis and lanes, where carts cannot enter, is carried to streets in wheel barrows. The carts were increased by 21 during the plague scare. The rubbish is used for filling up low lands and shallow ponds which have been previously dried up or dewatered. The practice is discontinued during the rains. A coating of earth or cinders is supposed to be spread on the top of the rubbish to absorb exhalations, but this is not sufficiently attended to. This tank filling is a very doubtful proceeding from a health point of view, but it is a choice of evils, and I think that in properly selected cases and where the material deposited consists only of light sweepings it cannot do much harm. It probably leads to less atmospheric contamination than the exhalations from the foul tanks which are a fertile source of fever and other diseases.

IX.—Trenching Grounds.

There are five of these in the town—

1. Andul 14 bighas.
2. Domepara 12 bighas.

For the Southern Division—

3. Belgachhia 141 bighas.
4. Jolapara 10 bighas.

For the Western Division—

5. Nandibagan 43 bighas.

For the Northern Division—

The trenching is on the whole carefully carried out.

There is always a tendency towards too deep trenching. The Overseers should give this matter very close attention. By regular shallow trenching a large area can soon be covered and made available either for cultivation or retrenching, as humification is complete in about three months. With deep trenches it takes much longer. Sullage water is disposed of by running it into long deep trenches at one part of the trenching ground well away from the nightsoil.

At Belgachhia the greater part of the ground is submerged during the rains, so that trenching then becomes impracticable except at one small portion which is above inundation level. The night-soil for this trenching ground is carried by a tramway truck service from Bantra, where there is a depôt.

X.—Stables and Cowsheds.

Next to private latrines these are the most fertile source of surface pollution in Howrah. Very few of the numerous thika ghari stables scattered about the town are provided with pucka flooring, and where any such exists, it is so broken and irregular as to be useless. In so me cases the horses stand on old and rotten boarding, which is worse than no floor at all, as dung and urine collect underneath and cannot be removed.

As for the cowsheds they are a positive disgrace. I inspected some at Haraganj recently. and have no hesitation in pronouncing them absolutely dangerous as sources of milk supply, The cows 20—30 in number are kept packed together, like sardines in a box, in low, dark, squalid sheds, with no provision whatever for ventilation, cleansing and drainage. There is usually a centre gutter by way of a drain, sometimes pucka, sometimes of wood, and sometimes entirely kutcha, leading to a cesspool outside or simply discharging on the surface. The inside gutter when pucka is in every instance out of repair and broken, but the places were so dark and so crowded with cows that it was impossible to see their exact condition.

Such a state of matters is not only dangerous to the public, but cruel to the animals. The outside walls of the sheds are literally covered all over with dung cakes, while the urine and washings are allowed to soak into the ground or drain into outfall channels. There were practically speaking no calves to all these cows, so the chances are that milk is largely extracted under the *phuka* process.

The reform of these insanitary stables and cowsheds is a matter of extreme urgency. The owners should be compelled to provide proper building for the animals. The floors should be paved or cemented in such a way that no soakage can occur, and efficient drains and cesspools should be constructed.

The cowsheds should be well lighted, well ventilated and kept thoroughly clean. Overcrowding should be prohibited. Sufficient space should be allowed to enable the animal to ie down. A space of at least 3 feet should exist between each cow. At present in every owshed I saw they were touching each other. At Dasani Bagan, Haraganj, in a yard belonging to Sasi Ghose Gowalla, there is a well just outside the cowshed and a few yards away from a private latrine and the *quasi* cesspools into which the cowshed discharges. The water of this well looks nothing short of liquid sewage, and yet I have no doubt that it is used for washing the dairy utensils, and possibly diluting the milk. All such wells should be filled up wherever they exist.

General Summary.

From the foregoing account it will be seen that Howrah, although better than it was, is still a disgracefully insanitary town, and its condition constitutes a very grave danger at the present time when plague is at our door.

The expenditure of a few lacs now will mean the saving of crores of rupees hereafter, and with such large interests at stake the question of reform ceases to be one of purely Municipal concern. In the matter of sanitation Calcutta and Howrah must be considered together, for they are practically one and the same city.

The sewerage and drainage scheme should therefore engage immediate attention and be commenced without delay. The foul bastis should be reclaimed, cleaned and provided with more public latrines, while the private latrines which now abound in them should as far as possible be swept away.

The housing of horses and cattle in stables and cowsheds should be carefully regulated and a stop put to the enormous surface pollution which they now occasion.

The Conservancy establishment should be increased so as to adequately cope with the requirements of the town, which is every day gaining in size and importance.

I regret that pressure of work in connection with the small-pox epidemic and the delay caused in collecting the necessary details have prevented the earlier submission of this report.

APPENDIX VI.

PROCEEDINGS OF THE MEETINGS OF THE PLAGUE COMMISSION.

Proceedings of the Bengal Plague Commission appointed in Plague Notification No. 9 of 10th November 1897, at their first meeting, held in Calcutta on Wednesday, the 8th December 1897.

PRESENT:

THE HON'BLE H. H. RISLEY, C.I.E.	*President.*
THE HON'BLE SIR PATRICK PLAYFAIR, KT., C.I.E.	*Members.*
THE HON'BLE M. C. TURNER	
ALLAN ARTHUR, ESQ., President of the Bengal Chamber of Commerce	
SURGEON-COLONEL J. H. NEWMAN, Inspector-General of Civil Hospitals, Bengal	
SURGEON-MAJOR H. J. DYSON, Sanitary Commissioner, Bengal	
SURGEON-LIEUT.-COLONEL G. BOMFORD, Principal, Medical College, Calcutta	
BRIGADE-SURGEON-LT.-COL. R. C. SANDERS	
" " " J. O'BRIEN	
" " " C. H. JOUBERT	
" " " E. G. RUSSELL	
SURGEON-LT.-COL. J. LEWTAS	
SURGEON-MAJOR A. W. D. LEAHY	
E. R. HENRY, ESQ., Inspector-General of Police, Bengal	
W. R. BRIGHT, ESQ., Chairman of the Corporation of Calcutta	
DR. MAHENDRA LAL SIRCAR, C.I.E.	
DR. KAILASH CHANDRA BOSE, RAI BAHADUR	
MAULVI ZAHIRUDDIN AHMED, Honorary Assistant Surgeon to His Excellency the Viceroy	
W. BANKS GWYTHER, ESQ.	*Secretary.*

THE PRESIDENT SAID:—Since we last met, or rather since I last presided, a great many things have happened which I must refer to as briefly as possible. The most important of all is the passing of the Venice Convention, the provisions of which I shall remark upon at some length, as the commercial community here do not seem to be aware how greatly this has improved their position with reference to quarantine. I understand that the Government of India have not yet learnt how far Foreign Governments have ratified the Convention, but that information on this subject will probably be received before long.

Section I of Chapter II of the Convention requires the Government of an infected country to notify all cases of plague, and for this purpose to keep itself informed of cases of plague and suspicious cases occurring in its territory. It thus raises a very difficult question which we shall have to consider, although I do not propose to bring it up to-day. It is the question of death registration in Calcutta. There is no doubt that the spread of the plague in Bombay and in Poona was partly due to the fact of the cause of death not being made known. The first cases escaped notice and were reported as fever, and there was no check on these reports, so that an epidemic got established before effective steps could be taken. In connection with the amendment of the Calcutta Municipal Act, a regular scheme of death registration has been drawn up, on which I had the advantage of consulting General Gatacre in Bombay and various other authorities there. Every one agrees as to the necessity of having an effective system, but in this country the whole subject is beset with difficulties. What I propose to do is to have the scheme printed and circulated among the members of the Commission, so that we may get in that way a pretty full expression of opinion.

Then comes the important provision, viz. "Any area in which a case of plague has been officially reported to exist will be considered to be *infected*." It is explained in a note that an area means, as the case may be, a province, district, town, village, and so on. The practical consequences of this are that you may say that, roughly speaking, the whole of the Bombay Presidency proper is infected, as it would be very difficult to pick out a district there now that is not more or less infected. On the other hand Sind, which has been infected, is not infected now, and you have also two or there infected villages in the Punjab. The Convention goes on to say that "Any area in which plague has existed, will cease to be considered as *infected*, when it is officially reported that no death or fresh case of plague has taken place for ten days after the recovery or death of the last case, provided that the necessary disinfection has been carried out."

That is important because it follows from it that Madras, which was infected about a month or six weeks ago, and has had no further cases, is not now an infected area. The same may be said of Hardwar, where the very vigorous action taken by the North-Western Provinces Government seems to have got the disease entirely under, and Hardwar is not now an infected area. To come nearer home if the report that appeared the other day that a case of plague had occurred at Chandrahatty had been true, that would not have meant that, under the Convention, Calcutta would be an infected area. If we could isolate that village,

the fact of the plague being there would not justify any foreign Government in imposing any restrictions whatever upon Calcutta, for the third section of the Convention says:—

"The precautionary measures should be confined to the infected tract, and the Governments concerned should only apply them to persons and goods from infected areas.

"But the obligation to restrict precautions to the infected area exists only on the express condition, that the Government of the *infected* country takes the necessary measures to prevent the exportation of susceptible articles derived from the infected area."

We should be obliged, however, to prevent the exportation of susceptible goods from the area infected, and provided we did that, the trade of Calcutta itself would not be liable to interference. Now we come to the most important provision of all. It is a list of susceptible articles and goods and is as follows:—

"(1) Used linen clothing, personal effects and bedding.

"When these articles are carried as baggage or in consequence of a change of abode (household goods) they are subjected to special treatment.

"Soldiers and sailors' kits, returned to their country, after their death should be treated in the same way as the articles named above.

"(2) Rags, not excepting rags compressed by hydraulic force which are carried as merchandise in balls.

"(3) Old sacking, carpets and all embroidery.

"(4) Raw hides, untanned and fresh skins.

"(5) Animal refuse, claws, hoop, horse-hair, hair of animals generally, raw silk and wool.

"(6) Human hair."

Those are the only articles of which a Foreign Government may prohibit the importation. You will see that the list does not include jute, tea, and many of the most important exports from Calcutta. As regards hides, there may possibly be a question whether hides treated with arsenic should be considered raw hides within the meaning given. Those who were members of the Commission from the beginning will remember that we had this question before us. We consulted Dr. Cunningham, and sent out an opinion, the result of which was that certain Governments which had been interfering with the exportation of hides before withdrew their prohibition as regards hides treated with arsenic, and I believe that the term hides treated with arsenic includes nearly all of the hides exported from Calcutta. I see that within the last month or so the German Government have ratified the Convention and have issued a notification based upon this section, indicating the articles that they propose to prohibit the importation of if necessary. It was published in the *Gazette of India* about three weeks ago, and does not include hides at all. I believe the reason of it is that the scientific men whom the German Government sent to Bombay to investigate the plague bacillus came to the conclusion that cattle did not get plague, and that consequently the bacillus did not take refuge in hides and articles of that kind, and that therefore they were perfectly safe. Possibly also they may have been fortified in this conclusion by the desire not to lose the trade. A later article says:—"Absolute prohibition or disinfection is the only measure which may be taken," and they go on to say that "disinfection will only be enforced in the case of merchandise and articles which the local sanitary authority considers contaminated, or whose importation may be prohibited." It comes to this then: they may prohibit articles in the list of susceptible, and they may not prohibit anything which is not included in the list, but they may disinfect any individual cargoes or consignment which they have reason to believe to be contaminated. So far as we are concerned these are the main points which arise out of the Convention.

We have also had recently two important Plague regulations. One of these was issued on the 10th of last month, which deals with three main points of importance. The first is the question of segregation. Well in this the Government was guided by expert medical opinion, tempered by the desire to deal as tenderly as possible with the feelings of the people of the country, and it has gone, as far as I believe it to be possible to go, in the way of permitting segregation in houses which are not regular hospitals. Provision is made for all cases in which private hospitals are proposed being sent up to this Commission. Several cases have already come up, and I have asked the medical members of the Commission to report upon these cases. If the houses are perfectly safe and can be kept fully segregated, then we shall allow them to be used as hospitals. Then there is the question of the general cleaning up of municipalities. We have given very full powers indeed in Calcutta to the Chairman of the Corporation, and in the mufassal to district officers, and we have made special provision for a matter which was brought to our notice by the Chamber of Commerce, viz., the state of suburban municipalities, and particularly Serampore. It is now entirely at the discretion of the Magistrates having jurisdiction in municipalities where conservancy is neglected to appoint Health Officers to do in the way of cleaning up pretty well everything that can de done, and to make those people pay for it whom they may judge to be equitably responsible. For example, we have heard a good deal about a *bustee* somewhere in Serampore, which is in a very filthy condition; all that the Magistrate has to do is to cause that *bustee* to be put in a proper state, and he can charge the entire cost of doing so on the people, whoever they may be who in his opinion are responsible for the condition of the *bustee*. I think that is fairly comprehensive, and leaves little to be desired in the way of authority. The regulation also deals with a very difficult question indeed, viz., that of the re-booking of railway travellers from infected areas. We have all of us here heard of various instances of people who, with a very natural desire to avoid medical inspection and possible detention at Khana, have taken fresh tickets somewhere or other between Bombay and Calcutta. When I was up at Khana the other day with the Lieutenant-Governor, inspecting the camp, we found that there was a sardar with 38 men of, I think, the Wadia

caste, or at any rate some great earth-working caste in Bombay. These men came from Surat, a virulently infected area, and were bound for the Assam-Bengal Railway. They had stopped at Bombay, which is also infected; and they then went on to Nagpur. There they took fresh tickets, and the result was that six days after they had left Bombay they appeared at Khana as passengers from Nagpur, a place where there is no plague. Their speech and appearance, however, betrayed them, and they were rightly detaind as suspicious. In order to stop this sort of thing certain rules devised by Mr. Henry have been embodied in regulation No. 9. They are a bit intricate, and I won't attempt to explain them here, but they are exceedingly thorough. The principle on which they are based is to work the district police, the Railway Police, and the chaukidari police in combination for the purpose of shadowing persons from infected areas who try to escape inspection. The village or chaukidari police in Bengal is a very strong body—I think 180,000 men or something like that, and they are now under very complete control. I will ask Mr. Henry presently to give to the Commission instances of rebooking which have been detected by this machinery he devised since it began working, which I think was about the 20th of last month. Since that time they have got hold of a number of very noticeable cases, and the system promises so well that the Government of India have been asked to consider whether the other Provincial Governments concerned should not be asked to assimilate their arrangements to ours, and to make their Railway Police work in communication with our Railway Police.

Since then (10th November) there has been another regulation issued relating to travellers by railway, road or river. This requires Medical Officers acting under the regulation to be guided by the principles of the Venice Convention as regards detaining travellers on suspicion of infection. Its regulation also introduces two entirely new systems, one of which is based upon the provisions of this Convention. It allows respectable people who are not *primâ facie* likely to carry infection to go through to their destination, wherever it may be, on executing an agreement to submit themselves to medical observation for ten days, after their arrival, and it further provides for the identification of such people by that system of thumb marks which Mr. Henry has developed so successfully, and which is, I believe, admitted to be an absolutely conclusive test of personal identity. The second novelty is the introduction of a system of passes enabling persons who come from non-infected places to furnish evidence of that fact, and thus escape the risk of being suspected of having rebooked in order to avoid inspection. The object of course is to give as little trouble as possible at these railway inspections, and also to reduce the work of our officers. It is obvious that if a man has to inspect 5,000 people in a day, of whom only about ten or a dozen or perhaps two dozen may be legitimate objects of suspicion, the more he has to inspect, the more likely he is to miss the few who really ought to be inspected. If, however, the police arrangements can be developed and perfected so as to render rebooking impossible, a man's railway ticket will be sufficient to show where he comes from and no passes will be necessary.

The Convention also involved the recasting of our rules for sea quarantine, and of our rules for the inspection of travellers by sea. There is nothing to be said about the quarantine rules. The Medical inspection of travellers by sea raised rather a difficult question. In the case of ships sailing from infected ports the Convention requires "Compulsory individual medical inspection by day on shore at the time of embarkation during such period as may be necessary by a Doctor appointed by public authority of each person sailing on the ship. Although Calcutta is not, and never has been, an infected port, it was thought desirable in the interest of passengers to have here the same arrangements as in Bombay. The Hon'ble Mr. Turner will remember that in last July he and I discussed this matter at length, and found it exceedingly difficult to arrange for this inspection to take place on shore. It is fairly easy to arrange it on board the steamer. At the same time we did not quite see our way to recommending a departure from the terms of the Convention, and it was settled that we were to try the system of inspection on land experimentally and see how it worked. Well, when I went to Bombay, I found that my friend Dr. McCartie, who so successfully organised and carried on the tremendously heavy work of medical inspection there, pronounced it absolutely impossible to do the thing on shore, and since then the Government of India have decided that the Convention need not be literally complied with. When I left Bombay myself we were all of us very carefully inspected on board the steamer, and most elaborate precautions were taken in respect of the crew who had of course come out of the bazar and had been exposed to infection. The system seemed to command the confidence of the Italian Government, for we had no trouble. Our dirty clothes were disinfected on board by steam. We were inspected on the ship by a Doctor who came on board at Port Said, and we were allowed to land at Brindisi, and go our ways without any further inquiry. This follows from the provisions of the Conference that any ship, even though coming from an infected port which has had no plague on board, is a healthy ship and gets free pratique irrespective of the bill of health. I need not point out what a large concession the British delegates to the Convention have thus secured. The mediæval theory of quarantine has been swept away and rules based on science and common sense put in its place.

Returning to our own regulations I forgot to mention just now that we are about to open three more inspection stations, one at Chausa near Buxar, which is just on the frontier of Bengal on the East Indian Railway, and which is very favourably situated as regards the Karamnasa river. Then, for the further protection of Bihar, there is to be a station at a place called Mairwa near Chapra, on the Bengal North-Western Railway, and for the protection of Chota Nagpur, we are starting one at Chakradharpur, and we have already

one at Khurda Road near Puri, guarding Orissa against passengers coming up from Madras and down from Bombay by the Hyderabad and East Coast lines. I think Chausa will be open in about ten days. The whole of our frontier being thus covered, there will be no necessity for keeping up Khana. Experience has shown that Khana is in itself not a very suitable place owing to the nature of its surroundings. It was selected at one of our meetings held immediately after the passing of the Epidemic Diseases Act for the immediate purpose of protecting Calcutta, because it guarded three railways—the loop and the chord, and the Bengal-Nagpur—and the members who were present at that meeting will remember that all the Railway officers were unanimous in thinking it a suitable place. It has since been found, especially during the rains, that the amount of high land is inconveniently small; that there are rice fields all round, and that there were accumulations of water of an undesirable description. It is very fortunate that there has been no outbreak of cholera at Khana as might very well have been the case. We have had only two cases of cholera there, and there is every reason to believe that neither of these cases took its origin in the camp itself. Although we are proposing to close Khana, we shall not depend entirely upon these frontier stations. We intend to have also a travelling medical staff, the members of which will go about on the various railways, and after communicating with the Railway authorities, will hold casual inspections at such places as they think fit, as a check upon possible evasions of the frontier inspections and in view of the rather remote possibility of a person developing symptoms of plague after passing those stations.

MR. E. R. HENRY:—In framing Plague Regulations I and II of November 1897, which constitute our working rules, attention was directed to formulating directions which should provide for the full utilisation of all existing executive agency. I refer to those clauses in the Regulations which embody what may be termed the preventive measures, and will state briefly what the executive agency referred to in these clauses consists of, and how it is being utilised.

The Regular Police, a force of over 22,000 men, consists of Railway, Town, and District Police. The Railway Police are posted at certain railway stations on the several lines of railway; the Town Police are in municipal towns, and the District Police are located at some 950 posts scattered over the 45 districts of this Province. There is in addition a force of about 160,000 rural policemen or chaukidars, representing about one chaukidar to every 80 houses. He is a resident of the village he guards; has prescribed duties to perform, one of which is that he must attend once a week at the police post, and there give information which is carefully recorded under appropriate headings, with a view to its being transmitted, if necessary, to superior authority for action to be taken. The importance of fully utilising the services of so extensive an agency cannot be over-estimated. I may now explain how this agency is being worked, and in natural sequence commence with the Railway Police, for as there is no plague in this Province, the probabilities are that, if it comes at all, it will come by the railway.

At the marginally-noted stations, numbering 36, the Railway Police prepare lists of travellers from infected areas who alight, and these lists are made over to the District Police, so that these persons may be kept under observation at their homes for a period of ten days. Should it be deemed desirable, Railway Police could be kept at all stations to supervise the work of the special establishment of chaukidars hereafter referred to, but this would mean increase of establishment and of cost, and is not at present deemed necessary, but it can be done at short notice.

East Indian Railway.

Buxar, Arrah, Dinapore, Gaya, Bankipore, Patna, Barh, Mokameh, Dumraon, Lakhisarai, Madhupur, Asansol, Raniganj, Monghyr, Jamalpur, Bhagalpur, Colgong, Giridih.

Bengal and North-Western Railway.

Siwan, Chapra, Sonpur, Hajipur, Muzaffarpur, Motihari, Bettiah, Segowli, Samastipur, Laheria Serai, Darbhanga, Sitamarhi, Partabganj.

Bengal-Nagpur Railway.

Chakradharpur, Purulia.

Eastern Bengal Railway.

Manihari Ghat, Naihati, Forbesganj.

At Chapra, Dinapore, and Chakradharpur, which are ticket-checking stations, the Police accompany the ticket-collectors, and make out lists of travellers from infected areas. The names and addresses of those who intend to alight at stations west of Khana are sent to the District Police concerned. Information regarding those whose destination is east of Khana is wired to the Khana observation camp, and a wire is also sent to the Calcutta Police, notifying the number of Calcutta travellers. The object of wiring to the Khana camp is to ensure that all the travellers from infected areas noted at the checking stations as passengers to places east of Khana shall come under observation at Khana, and shall not elude examination by breaking journey and taking fresh tickets. To further clinch this check, the tickets of such travellers are taken from them at Asansol, a receipt being given and are made over to the Guard of the train, who delivers them to the Railway Police at Khana. At Khana the Medical Officer makes out a list of travellers from infected areas permitted to continue their journey to Calcutta without detention, which is forwarded through the Railway and Calcutta Police to the Calcutta Health Officer, and he arranges to have these travellers regularly visited by Medical Inspectors. It was anticipated that many persons would give wrong names and addresses, but such cases have not been numerous, and no difficulty has been experienced in tracing most of the missing persons.

It is of course essential that Plague Rules should be worked with no more stringency than is needed in the interests of the community. Hitherto the facility with which identity could be confused by the assumption of a wrong name or address might have been deemed a valid objection to providing in the Regulations for the issue of certificates by local authorities

which should operate as a free pass through observation camps. Plague Regulation II contains a provision which meets this difficulty, and will prove a great convenience to the travelling public. Persons obtaining certificates that they have been residing in uninfected areas are required to make on the certificate an impression in ink of their thumb, and their identity is thus incontestably fixed, for the Medical Officer, to aid whom a competent expert is being given, can have the traveller's thumb mark taken in his presence and compared with that on the certificate.

In addition to the various checks applied by the Railway Police, a small peripatetic staff has been entertained, who travel up and down the line, even beyond provincial limits, to ascertain where travellers break journey in order to escape examination. I have already reported several such cases to Government, and am now in a position to put in a much fuller list.* The East Indian Railway have reported that booking returns from the Bombay side to stations east of Khana prove that travellers to Calcutta must be systematically breaking journey so as to conceal the fact that they are travelling from infected parts. The list of over 20 authenticated cases which I am able to give corroborates the opinion expressed by the railway authorities, and shows the necessity of sustained vigilance in detecting such attempts. This practice constitutes a real source of danger, and when our observation camps are moved to Chowsa and Chakradharpur on our frontier, this practice can only be rendered ineffective by other Administrations adopting police precautions similar to those contained in our Plague Regulation No. I.

* Herewith attached.

At most of the stations which are west and north of Khana, chaukidars entertained by District Boards, and, at the railway stations which are within or near municipal limits, Town Police are required to attend. The duties of these chaukidars and Town Police are detailed in Parts II and III of Regulation I, and are now being carried out. Briefly stated, their duties are to aid the Railway Police, at stations where there are Railway Police, to convey lists of travellers to the District Police, and to verify, when necessary, travellers' statements as to their destinations, etc. Where there are no Railway Police, that is, at the less important stations, the number of persons who alight is small, and it is expected that the two chaukidars detailed for this work, who are men with local knowledge and of ordinary shrewdness, will be able to detect travellers who are alighting to rebook in order to make it appear that they have not come from infected parts. As before stated, all or any specified railway stations can be linked up, and Railway policemen entertained there to make out lists and supervise the working of the chaukidars.

The duties to be performed by the District Police are also set forth in detail in the Regulations, and are now being performed all over the Province. Once a week every rural policeman or chaukidar attends at the police post, and is interrogated, and any information elicited from him is recorded. He is required to register all births and deaths in his village, and where mortality is above the normal, enquiries are at once set on foot. The symptoms which indicate plague have been explained to these men; and though their diagnosis is not likely to be correct, their attention has been directed to the necessity of reporting forthwith cases of illness or death from disease, the symptoms of which are different from those they are accustomed to.

It will be seen, therefore, that the Government is now utilising this very extensive regular and rural police force as an agency to be worked under the Plague Regulations, and it seems scarcely possible that many cases of plague could occur without intimation being at once given to the responsible authorities.

Up to the present Government has given no definition of infected areas. The following definition, which, though not exhaustive, is sufficiently full for practical purposes, has been given to the Police:—"Infected areas are areas served by stations on the Great Indian Peninsular, Bombay-Baroda and Central India and Southern Mahratta Railways." This definition can be supplemented at any time should occasion arise.

LIST OF ATTEMPTED EVASIONS BY REBOOKING.

Extract from the diary of MR. W. SWAIN, *Assistant to the Assistant Inspector-General, Railway Police, Howrah, regarding the breaking of journeys by Bombay Passengers.*

17th November 1897.—John Johnson, sailor, detained at Khana from Bombay, said he had a bet with two shipmates as to who would reach Calcutta first. At that time his mates had not come under observation, but were caught at Khana the next day, having broken journey and obtained fresh tickets at Bhasawal and Raniganj.

2. *19th November 1897.*—Ganga Ram and Joyram, of village Satuyer, district Betal, Central Provinces, left Byculla with tickets for Bilashpur. There they got fresh tickets to Asansol, and from there again to Giridih, where they were detected by the Police on 19th November—*vide* Inspector, Burdwan's diary, paragraph 18, dated 25th November.

3. *Burdwan Inspector's diary, dated 25th November 1897, paragraph 14.*—Hajim Hajiballee and Latif, with tickets from Dhola Junction (Bhavanogore-Gondal Railway) *en route* to Calcutta, were detected at Raniganj when alighting to get fresh tickets. They had been overlooked at Asansol. On renewing their journey, the Raniganj police gave information to Khana, where they were detained.

4. *17th November 1897.*—Hussain and Lal Khan, with tickets (2nd class) Nos. 7409 and 7410 from Victoria terminus to Calcutta, alighted at Raniganj. They left the station by the entrance gate instead of the exit, and their tickets were not taken—a mistake which the

Railway Company have been asked to rectify. They were consequently at that time not detected, but shortly afterwards the Town Police detected them in the bazar, and brought them back. The Railway Police took their tickets and handed them over to the Guard, and at Khana they were detained—*vide* Inspector, Burdwan's diary, dated 19th November 1897.

Extract from MR. SWAIN, *Assistant Superintendent's note on working of the check system, dated 26th November 1897.*

5. Rastamji Dhanji and Dinshah Mirwan, of Nasik, Bombay, broke journey at Jubbulpore, got tickets to Asansol, alighted, and got fresh tickets to Raniganj, where they were detected, having been overlooked at Asansol.

At Raniganj their names were put in the special list, and they were handed over to the Town Police to shadow. The Town Police did it so effectually that they determined to continue their journey by road. The Inspector then told them that in that case also they would be watched, so they said—Very well; we will go back again." They then returned to the station, and took tickets from Asansol, and the Railway Police were informed by Raniganj Railway Police. They remained a day in Asansol, and then separated, one taking a ticket to Howrah and the other to Khana itself, and leaving by different trains. The Inspector, Khana, was informed by wire, and both men detained.

6. *29th November 1897.*—Constable Akbar Ali, specially deputed to go to Bombay and back to find out how passengers endeavoured to evade Khana, reported on 30th November 1897 that while at Jubbulpore he overheard conversation amongst 10 third class and 2 second-class passengers from Bombay, who were taken out at Jubbulpore to be examined. They said that on reaching Allahabad they would purchase fresh tickets to escape detention at Khana. The constable came along with them, and at Allahabad they purchased tickets for Calcutta. The constable again travelled with them, and at Khana pointed them out to the Inspector, and they were detained in spite of their denying having come from Bombay. The constable also said that while loitering about the booking office, Bombay, he noticed very few tickets for Calcutta were bought.

7. Haji, Fusul and Abdul Latif left Jetalsa Junction on 23rd November 1897. They changed tickets at Veramgam for Melessana. After remaining 8 hours, they got fresh tickets for Howrah, were detected at Dinapore, and taken out at Khana on 29th November 1897.

8. Mohamed Tayali Sate and Jumna Sate left Jumnagar on 22nd November 1897 with tickets to Rajkote, halted one day and went on to Bhudwa. Staying two hours, they got fresh tickets to Veramgam, from there fresh tickets to Melessana, from there again fresh tickets to Howrah. They were detained at Khana on 29th November 1897.

9. Rai Chand Guzrati, of Katiawar, left Bombay on 22nd November 1897 with ticket to Jubbulpore, where he stayed six days and took a ticket to Howrah. He was taken out at Khana on 2nd December 1897.

10. Wali Mahomed, of Ahmadabad, left Rampore, B. G. J. P. Railway, to Wadhwan, thence with fresh ticket to Agra, and thence with fresh ticket to Howrah. Detained at Khana on 3rd December 1897.

11. Luchmi Narain left Bicaneer with ticket to Moghulserai, halted two days and got a fresh ticket to Howrah. Detained at Khana on suspicion on 2nd December 1897.

12. Wali Mahomed, Abdul Rahman, and Abdul Gunni, of Jatepore, Katiwar, left for Rajkote, stayed three days, thence got fresh tickets to Wadhwan, thence fresh tickets to Agra, and thence fresh tickets to Howrah. Detained at Khana on 3rd December 1897.

13. Abdul Latif, Yakub Thaman, and Abdul Thaman left Jumnagore on 26th November 1897 for Rajkote, thence to Wadhwan, the same day to Veramgam. After staying eight hours they got fresh tickets to Agra, and thence fresh tickets to Howrah. They were detained at Khana on 3rd December 1897.

14. Jamna Dass, of Mesana, broke journey at Ajmere for six days, thence took ticket to Agra, and thence fresh ticket to Howrah. Detained at Khana on 4th December 1897.

15. Ram Dewal Marwari, with 3 women and 5 children of Sikkar, district Jaipore, left on 29th November 1897 for Karchaman, thence to Agra, and thence to Howrah by fresh tickets. Detained at Khana on 4th December 1897.

16. Jamna Dass, of Pourbanda, Bombay, was detected at Raniganj holding ticket from Jubbulpore to Howrah. He had broken journey at Jubbulpore, and was breaking at Raniganj, probably to get another ticket, but was detected before he had done so. His ticket was given to the Guard, and information sent to Khana on 1st December 1897.

17. Sheik Mahomed alighted at Raniganj with a ticket from Asansol. He was suspected and questioned, when it appeared he had come from Bombay. In the evening he purchased a new ticket for Howrah. He was seen doing so, and his ticket taken and handed to the Guard, and information sent to Khana.

18. Ishmail, Mahomed Ibrahim, Ishmail Amad and Munjun Lal Balabhoy took tickets from Nowsheri on 30th November 1897 for Asansol, thence fresh tickets for Howrah. They were detained at Khana on 5th December 1897.

19. Jugal Kisore and five members of his family from Jeypore took tickets on 29th November 1897 from Behani to Delhi, thence to Lakhisarai, and thence to Howrah, detained at Khana on 5th December 1897.

20. F. Buckley, holding 2nd class ticket from Belgaum to Howrah, was observed to alight at Asansol on 29th November 1897, and to sleep in the waiting-room. The next morning the head constable saw him purchase a fresh ticket, and demanded it from him. Thereupon he got the new ticket cancelled and proceeded with his old one, which the head constable took from him, and handed to the Guard. Information was wired to Khana.

BRIGADE-SURGEON-LIEUTENANT-COLONEL SANDERS.—Have any instructions been given about cutting off the carriages of those trains in which cases of plague may occur?

THE HON'BLE MR. RISLEY.—Yes; instructions have already been issued.

DR. KAILAS CHUNDER BOSE.—Is it necessary that the thumb mark should be made in black ink? I am talking about some religious customs and social matters of the people. They will object to put their thumb marks in black ink during a marriage feast for instance, as while that lasts everything black is forbidden by religious and social customs. I am simply asking the question, and have no wish to place any obstacles in the way. I should think we might use red ink or ink of some other colour.

THE HON'BLE MR. RISLEY.—What should be said to people who raise such an objection as this. It is admitted that if you have anything to do with black ink of your own free will, it may be most inauspicious, but none of those dreadful consequences will follow if you are obliged by the law or the powers that be to touch black ink. I think that completely answers the objection. I believe it is also the case that black scares away evil spirits, so in any case you have some set off.

DR. KAILAS CHUNDER BOSE.—Is it necessary also that the thumb mark should be certified by the Magistrate, or that the marks should be made in his presence?

THE HON'BLE MR. RISLEY.—You can go to the Magistrate, the Civil Surgeon, the Subdivisional Officer, and the District Superintendent of Police. That seems as many authorities as any one can want.

DR. KAILAS CHUNDER BOSE.—Might I also enquire why the left thumb only is asked for?

THE HON'BLE MR. RISLEY.—The reason for that is that a man's right thumb is frequently very much worn by work, and the distinctive lines are not so clear as on the left.

At this stage in the proceedings Mr. Henry showed the members of the Commission how the thumb marks were made, and several impressions were taken in order that the process might be thoroughly understood.

THE HON'BLE SIR PATRICK PLAYFAIR.—Mr. President. Do I understand that your opening remarks will be published?—The reason I ask the question is because, rightly or wrongly, I have come to the conclusion that the public does not understand the terms of the Venice Convention. Speaking for myself, I was away when the report was issued, and I did not see it until the other day. The subjects dealt with by the Convention were discussed with Dr. Cleghorn by the Select Committee before the Epidemic Diseases Bill was passed into law. Dr. Cleghorn has succeeded in limiting the articles which may be prohibited by other nations, and I would suggest that we should make this and the term of the Convention clear to the public, including the mercantile community.

MR. ALLAN ARTHUR.—A copy of the Government of India letter of 1st June, to the Government of Bengal, commenting on the Convention, was sent to each member of the Chamber of Commerce.

THE HON'BLE SIR PATRICK PLAYFAIR.—Does Mr. Henry think it would be a good thing if trains carrying third class passengers were not allowed to pass through observation places at night? Would it be of advantage if this could be arranged?

MR. HENRY.—I do not think it would be practicable. It would, however, be a great convenience to us if all the passengers coming from infected areas could be kept in separate compartments. I should like to enquire if the railways will give passes to the increased peripatetic staff we are about to employ; they are rather loth to increase the number of passes, I believe.

THE HON'BLE MR. RISLEY.—I think the suggestion a reasonable one.

Proceedings of the Bengal Plague Commission appointed in Plague Notification No. 9 of 10th November 1897, at their second meeting, held in Calcutta on Saturday, the 5th February 1898.

Present:

THE HON'BLE H. H. RISLEY, C.I.E.	*President.*
THE HON'BLE J. G. H. GLASS, C.I.E.	*Members.*
SURGEON-COLONEL J. H. NEWMAN, Inspector-General of Civil Hospitals, Bengal	
SURGEON-MAJOR H. J. DYSON, Sanitary Commissioner, Bengal ...	
BRIGADE-SURGEON LT.-COL. R. C. SANDERS	
" " J. O'BRIEN	
" " C. H. JOUBERT	
" " E. G. RUSSEL	
SURGEON-LT.-COL. G. BOMFORD	
" " J. LEWTAS	
W. R. BRIGHT, Esq., Chairman of the Corporation of Calcutta ...	
DR. MAHENDRA LAL SIRCAR, C.I.E.	
DR. KAILASH CHUNDER BOSE, RAI BAHADUR	
MAULVI ZAHIRUDDIN AHMED, Honorary Assistant Surgeon to His Excellency the Viceroy	
W. BANKS GWYTHER, Esq.	*Secretary.*

THE Commission considered letter No. 5782 of 13th January 1898, addressed to the President by the Chairman of the Municipal Corporation, forwarding copies of reports

prepared by Dr. Neild Cook, the Health Officer, and by Dr. R. Sen, Assistant Health Officer (when acting as Health Officer), describing in detail the measures to be adopted for dealing with an outbreak of plague, should such occur, in Calcutta.

The PRESIDENT said:—A resolution has just been issued by the Government of India with rules attached to it. The rules embody the most recent Bombay experience, and will involve the recasting to some extent of this scheme, which was based on notes prepared by Dr. Dyson who was sent across to Bombay for this purpose. Matters travel very rapidly indeed in plague questions, and within the last two months much has been learned in Bombay, which is now embodied in the new rules. These rules have been drawn up by Mr. Wingate and Dr. Cleghorn, and have been accepted as the soundest doctrine on Plague Administration, so it would be waste of time for us to go through all the details of this scheme. What I would like to do is to put to the Commission three points only, and if we decide these, then the Chairman of the Corporation will have no difficulty whatever in putting the scheme into modern shape. The first is the question of ambulances. On this point the Chairman says:—"We have two two-wheeled and one Bombay pattern ambulance in stock at present, and I thought this supply sufficient until the danger become more imminent, as we could easily obtain and use hospital doolies till ambulances could be made. This is a matter, however, upon which your opinion is requested." Here the first question one naturally asks is—What is the ordinary demand for ambulances? Are they used for ordinary purposes?

MR. BRIGHT.—No; not for ordinary purposes. We could procure any number of palkies, and they run very easily. You can put a patient straight in; or you can do better still, and sling his cot on to a bamboo.

DR. NEWMAN.—Have the police in Calcutta ambulances?

DR. AHMED.—No; they have only palkies for carrying small-pox patients; these palkies or palkies similar to them would be suitable.

The PRESIDENT.—Well there are about 25 thanas I believe, and there ought, therefore, to be about 25 palkies. Do you think there is any necessity for us to get new ambulances?

DR. LEWTAS.—I do not think it is necessary; the palkies will do quite well.

The PRESIDENT.—Our decision is then: that it is understood that every police-station is already provided with a special form of palky suitable for removing patients to hospital. There is consequently no necessity at present for providing a large stock of ambulances.

The PRESIDENT.—The hospital at Manicktola is the next question. On this point the Chairman says:—"Dr. Cook describes Manicktola as thoroughly unsuitable, and wishes a new hospital made in Calcutta. Upon this point I have to make the following remarks. The Manicktola hospital is admitted to be open to the objections raised, which are in no way new; but it has been hitherto considered that, considering the large expense the municipality has already been put to in making this hospital, it would be wiser to use it on the first outbreak of plague, and it was for this reason that no new hospital has been erected." I spoke to Dr. Cleghorn about this question yesterday, and I said—I believe correctly—that Manicktola is about five miles from this part of Calcutta, about seven miles from Garden Reach, and from the north of the town it is about four or five miles. Dr. Cleghorn said that such a journey as that would probably kill a genuine plague patient—he would die on the way. But it does not follow that if you condemn the hospital at Manicktola, that Manicktola will be useless, as it would do very well for a camp. Dr. Cleghorn suggested that we should set apart, at the outside, six beds for males and a similar number for females in a hospital in some accessible locality. He suggested an ordinary dispensary.

MR. BRIGHT.—You mean that we might rent a house?

DR. DYSON.—I think that would be the best; it is the cheapest in the end.

MR. BRIGHT.—I have got everything ready—plans and specifications drawn up for plague hospitals directly the disease makes its appearance, or gets any hold on the town.

The PRESIDENT.—All you want to do at present is to have some place or rather two places where you can put away one or two cases, if a casual case or two may be imported. What you require to do with such a case is to take it away to a hospital, and take every person in the house away to the segregation camp, the camp you have got already at Manicktola.

DR. SIRCAR.—I think Manicktola would be death to many people.

DR. DYSON.—Dr. Cook told me he went round the garden-houses there, and thought them fairly suitable.

The PRESIDENT.—Do you think, Dr Sircar, that it would kill healthy people to be put for 10 days at Manicktolla?

DR. SIRCAR.—There is no doubt about it; it is a very malarious place.

The PRESIDENT.—If you had a real plague case, the patient would be dead before you got him to Manicktola. That seems to me to be a strong objection to its use for real plague cases.

DR. DYSON.—I do not think we ought to say that a man who has got plague will necessarily die on the way. If you get the case very early, there is no particular reason why the patient should die.

MR. BRIGHT.—In any site you take up in Calcutta, you cannot ask us to have more than one plague hospital ready at present. If it is a question of dying between here and Manicktola, it is the same between any point you can suggest and the point of the town at the greatest distance from it. In Beadon Square or Marcus Square it would be four miles from the other end of the town.

The PRESIDENT.—If we do accept Manicktola, does it necessarily mean building?

MR BRIGHT.—It would mean either building or hiring. It would not take any particular time to build.

DR. O'BRIEN.—I do not see any necessity for building at present until the plague makes some nearer approach to Calcutta. I do not think patients would die on the way to Manicktola if they were comfortably carried, and if they did, I do not think it would be on account of the journey.

DR. BOSE.—The patients might not necessarily die on the way. Manicktola is close to the native quarter, although it is some distance from Garden Reach and the European quarter. I do not see anything against it if the sanitation is good.

DR. AHMED.—Many people are carried from distant places to hospitals, and the majority of them do not die if they are comfortably carried.

DR. SIRCAR.—I am against it absolutely.

DR. O'BRIEN.—I am in favour of it.

DR. JOUBERT.—I think we could keep it for emergency purposes until we get an outbreak.

DR. RUSSELL.—I quite agree that Manicktola will do very well for the early cases.

DR. LEWTAS.—I think it might be left for the early cases in the present state of the question.

MR. BRIGHT.—It is distinctly understood that, as soon as the plague is established in Calcutta, we should at once set to work to run up our plague hospitals in Beadon Square, Marcus Square and other places. We should only want Manicktola during the time we are erecting new hospitals in the town.

The PRESIDENT.—Well, if you leave Manicktola as a hospital, you must have a place close to it as a camp.

MR. BRIGHT.—There are several garden-houses there, and I can use one as a segregation camp under my present powers.

The PRESIDENT.—We agree then that Manicktola is to be retained for any cases which may occur in the first place, that is to say, imported cases as distinguished from indigenous cases, but that there must be provided in the neighbourhood of Manicktola a segregation camp with sufficient accommodation for the persons who have to be removed from the house in which the plague case occurs, and possibly from neighbouring houses.

The PRESIDENT.—The next point is about disinfectants and disinfecting apparatus. The Chairman wishes to stick to Chinese pumps.

MR. BRIGHT.—On the advice of our late Medical Officer, we have spent a large sum of money in buying a disinfecting machine, which I am now told by the new Health Officer is perfectly useless.

DR. DYSON.—The other day I had the opportunity of trying, with Messrs. Heatly and Gresham's representative, their new sprayer. It would not reach to the ceiling of the room by any chance. We then tried the Chinese pump, and it squirted all over the room at once. The cost of the latter is Rs. 3-8 and the former Rs. 200.

The PRESIDENT.—We may then agree to the Chinese pumps being sufficient for disinfecting purposes at present.

The PRESIDENT.—Then the Chairman asks for instruction as to the inspection of corpses. Dr. Sen writes:—"For the correct registration of the causes of death, compulsory production, with every corpse, of a medical certificate from one of the officers appointed for the purpose will have to be enforced. For this a special order from the Plague Commission is required, and is hereby solicited. Such medical certificates must be obtained from one of the medical officers of sanitary circles, who will grant them free of charge on application made before the death of the patients concerned. This rule ought to be brought into operation at once.

"To receive such certificates and see that they are correct, inspect the corpses and see that they are properly disposed of, register the death accurately, and see to the proper disinfection of persons or conveyance carrying the dead, and the burning or burial of clothes covering the dead, qualified Civil Hospital Assistants will be on duty at each of the public cremation grounds and cemeteries that may be in use." Dr. Sen, therefore, contemplates a system of death registration, coupled with inspection of corpses at the various burial and burning grounds, being introduced at once. It seems to me that would be extremely premature. We have at present a fairly complete system of death registration, and we also have under the existing law a sort of check registration at the various burial and burning grounds. I take it that that registration will give you a clue to any abnormal increase of mortality. In fact there has been no such increase up to the present.

MR. BRIGHT.—The mortality during the past year has been high, but that has been due to various forms of fever. It is now falling.

The PRESIDENT.—I have ascertained what has been done in Bombay, Poona and Karachi. At the latter place in particular they inspect every corpse that comes to be buried or burned. That involves touching the corpse, and nobody has objected.

DR. O'BRIEN.—Are the bodies inspected at present? I must say, from my own personal knowledge, that the registration in Calcutta of the causes of death is of the most perfunctory and *kutcha* character. I consider it highly important that we should immediately prepare to take steps to ascertain the causes of death. Bubonic plague is very easily recognized.

DR. SIRCAR.—I must say that the mode of death registration in Calcutta is anything but satisfactory. Some better system must be devised by which we can ascertain the real cause of death, and that can only be done by inspection of corpses. If the body is that of a Hindu, nobody will object to a Hindu Assistant Surgeon touching it.

The PRESIDENT—But suppose it is the body of a female?

DR. AHMED.—The Muhammadans would object to an inspection which involves touching the bodies.

DR. SIRCAR.—Yes; Hindus would object in the case of females.

MR. BRIGHT.—I feel certain that if we started an inspection now, it would raise objections amongst Hindus and Muhammadans.

DR. O'BRIEN.—I am inclined to think that if we had an Assistant Surgeon at each burning ground, he would find out a great deal about the causes of death; he would find out from the relations, and various sources.

DR. JOUBERT.—Would the replies be of any value; they could not be tested?

MR. BRIGHT.—We get the statements of the relatives under existing circumstances.

The PRESIDENT.—It is proposed to insert a clause in the Calcutta Municipal Bill to the effect that the death registrars of the district in which the burning ghat or burial ground is situated should visit the place between certain hours of the day, and should then supply missing certificates and make the necessary enquiries. My feeling is that we should take no action in the matter at present.

MR. BRIGHT.—I certainly think so also.

DR. JOUBERT.—Do you think one man could do it sometimes? I do not think he could.

The PRESIDENT—We thought it might be done in this way. There are in each ward so many private medical practitioners. They might be given retaining fees for the purpose of inspecting the bodies. They would be licensed for the purpose.

DR. DYSON.—I think we should wait for the present.

DR. SIRCAR.—I should not do anything just at present.

The PRESIDENT.—Then the opinion of the Commission is that the existing arrangements for death registration may remain in force for the present, it being understood that as soon as plague occurs in the town, or there is a suspicious rise in mortality, the Chairman of the Corporation will at once take steps to enquire into the matter and report to the Commission.

The PRESIDENT.—There is one other point, and it is rather an important one. I take it that it is now generally agreed that when you have plague in a place the only way of stopping it is absolutely to empty the place in which it prevails. They did not do that in Bombay at first, and they are having to do it now. I dare say most members have seen that orders have recently been issued by the Government of Bombay to remove from the city large numbers of the population by rail. There is no doubt whatever that if we got a real outbreak in Calcutta, that is, what we should have to do. It is perfectly certain that there is no ground within ordinary reach of Calcutta, nor in what you may call the outskirts of the city. Some areas will have to be selected at a distance off. Perhaps the Chairman of the Corporation will be able to find out what high lands there are in the Barasat subdivision. This should be a feature of the scheme.

There being no other points to be considered, the President said:—I propose then that the scheme be referred back to the Chairman for consideration, together with the resolution of the Government of India summing up Bombay experience, and giving the Bombay Rules (which have now been prescribed for general adoption by all Local Governments and all persons who have to deal with the plague) together with the views of the meeting upon the points which have been discussed.

This was unanimously agreed to, and the proceedings then terminated.

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T. N. R.—Reg. No. 5244J—350—11 9-99.

Digitized with financial assistance from

Government of Maharashtra

on 01 February, 2020

HISTORY AND PROCEEDINGS

OF THE

PLAGUE COMMISSION, BENGAL.

1896 TO 1898.

CALCUTTA:

BENGAL SECRETARIAT PRESS.

1899.

Price Rs. 2.